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THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

JUNE, 1889.

ON THE DIAGNOSIS AND TREATMENT OF GASTRIC ULCER.

BY WILLIAM M. ORD, M.D.,

PHYSICIAN TO, AND LECTURER ON MEDICINE AT ST. THOMAS'S HOSPITAL, LONDON.

IN considering this subject from the practitioner's point of view, I shall avoid recondite pathology as far as possible. But as an introduction to the study of the subject, it is necessary to define what may be called the coarse anatomy of gastric ulcer.

I think that all who have given attention to this matter will recognize the occurrence of at least two polar forms of gastric ulcer; possibly, quite apart from new growth, there may be other forms; but of the two I may speak with a certain amount of confidence.

The first is the deep perforating ulcer most frequently found in young women: an ulcer which typically has purely erosive characters, presenting round or oval outline, penetrating to various depths through the mucous membrane and muscular tissues, having sharp edge, undisturbed by inflammatory thickening, and crateriform shape. Such ulcer, as it penetrates through the walls of the stomach, may open vessels and give rise to hemorrhage, or may traverse all the coats, and open into the peritoneal cavity. The term "perforating ulcer" has often been applied to it, and most appropriately. The site of such ulcer varies; but, for the most part, it occupies rather the median zone of the stomach than either of the extremities; it affects the lines of the curvatures, the lesser more frequently than the greater; but it may be found more frequently on the posterior wall of the stomach. Pathological specimens show that such ulcers may heal, and leave deep, puckered scars.

The other form of ulcer is diffused, comparatively shallow, with raised

or overhanging edges, irregular outline, and uneven surface. It is found more commonly in the right half of the stomach, approaching, in fact, more or less to the pylorus.

The symptoms and associations of the two kinds of ulcer differ in a marked way. The subjects of the first are young women; a very large majority of them, so far as my experience goes, employed in domestic service. As they come before us for treatment they present a curious agreement in their physiognomy. Probably the first thing attracting attention is their anæmia. It is an anæmia not by any means associated with emaciation, rarely associated with pigmentation, and on the whole associated with plumpness and transparency of the skin. A large majority of the subjects are, as regards bulk, well nourished. At the same time a large majority appear to be irregular in respect of their catamenial function, chiefly in the way of deficiency. I think we may take it for granted that menstruation is, as a rule, imperfectly established. It is not unimportant to mention that subjects such as these are, with exceeding frequency, the victims of acute rheumatism.

The SYMPTOMS presented by such subjects when suffering from gastric ulcer may be grouped under four principal heads: First, pain; second, tenderness; third, vomiting; fourth, hæmatemesis.

Pain. The pain is usually not continuous, but occurs after food-taking, sometimes immediately, sometimes after an interval of half an hour, or an hour, or even more. It is generally of a very acute kind, and recurs at a particular spot after every meal, being sometimes limited to that spot, sometimes extending in various directions. Thus, for instance, a pain regularly beginning at a point in the epigastrium will extend to the back and radiate upward over the chest; or beginning in the back may extend upward along the vertebræ, and forward into the epigastrium. During the existence of the pain there is usually much tenderness over the epigastrium, whatever part of the stomach may be exposed to pressure. Should vomiting occur, the pain is subsequently annulled or greatly mitigated.

In well-marked cases of gastric ulcer, pressure over the epigastrium and stomach-area usually produces pain at all times, increased, as has been noticed, when internal pain occurs after food-taking. We shall see presently that such tenderness may be determined by two conditions: first, by ulcer; second, by gastritis; but before going further it may be urged that the tenderness of ulcer is much more acute than that of gastritis.

The importance of vomiting as a sign of gastric ulcer has been variously estimated. Some authors would regard vomiting as a more important symptom; some would rely more upon the character and sequence of pain already described. It is certainly true that many variations in the proportion of the two symptoms are to be observed. But in my

experience vomiting, as an isolated symptom, is less decisive than pain. As a conjoined symptom vomiting has an importance often decisive. When pain has, for instance, already occurred, and has lasted for a time proper to the particular case, vomiting takes place and brings immediate relief. It is true, that there may be many variations in the severity of the pain and the persistence of the vomiting; but both symptoms being present, the meaning of the succession can hardly be doubtful.

The observation of the matters vomited is, of course, an important point in diagnosis. They may consist of food hardly altered; of food partly digested; of food mixed with abnormal gastric juice; of food mixed with mucus in various proportions; and of blood, variously mixed. In other words, we may have such irritability of the stomach as determines at once the rejection of what has been received. We may have next, owing either to the position of the ulcer or to impairment of the action of the stomach, rejection of the food at a later stage of digestion; the rejection being determined, in one case by disturbance of peristalsis, in the other, by the irritation of ill-digested matters.

The presence of much mucus in the vomit will indicate the complication of gastric catarrh, a subject of much importance in relation both to the diagnosis and treatment of gastric ulcer; a subject which we shall have to discuss more fully later.

The hæmatemesis of this form of gastric ulcer has very distinctive characters. It is very rarely continuous, very rarely small in quantity. Our general experience is that women suffering from some of the symptoms already detailed will have once, or once and again, or on several occasions, profuse gastric hemorrhage, bringing them into the jaws of death, but very seldom actually killing them. The blood thus vomited is mostly coagulated, and, by reason of its volume, little affected by the gastric juice. The anæmia of such cases very reasonably leads to the suspicion that hemorrhage in bulk inadequate to the production of vomiting may have occurred often, and may have contributed to the characteristic anæmia.

With the more decisive signs so far considered, young women suffering from gastric ulcer present many secondary symptoms, such as anorexia, excessive appetite for food or depraved appetite, particularly for acids, constipation, or, more rarely, diarrhœa; headaches, particularly frontal; neuralgia, shortness of breath, palpitation, undue pulsation of the abdominal aorta, tinnitus, giddiness, and the symptoms which are grouped under the head of hysteria.

So far we have been getting before our eyes a general view of the aggregate of symptoms. But it must be remembered that there are many variations which are to be observed in each and all of them. The pain, for instance, varies considerably as to time, position, and character. In some cases it arises shortly after taking food, or even during a meal.

There is every probability that such sudden occurrence is induced by a definite position of the ulcer, viz., in the cardiac end of the stomach. Later occurrence of the pain in all probability marks increasing distance in the position of the ulcer from the cardiac orifice. But while inferences drawn from anatomy have a definite value, we have to take into account the conditions of the stomach generally, and also of the patient.

My experience is to the effect that in not a few cases where the localization of pain is far toward the right limits of the stomach, the ingestion of food excites at once the suffering. There is evidently a hyperæsthesia of the whole organ, which may be simple or dependent upon catarrh associated with the ulcer. Where there are much anæmia and much general nervous susceptibility, we may, on the whole, regard the early occurrence of pain as a mark of simple hyperæsthesia. Should vomiting occur we have an important commentary in the character of the egesta. For instance, the absence or presence in varying quantities of stringy mucus will help us to understand the meaning of the early access of pain. I do not refer to these varieties in a spirit of curious observations. In my experience they have important relations to treatment with which I shall deal later on.

Under the head of time of pain we must include duration. In gastric ulcer uncomplicated by inflammation of the stomach the duration of pain is comparatively limited; for the most part certainly it is not felt when the stomach is empty, or comparatively empty; though I must admit there are exceptions to the rule.

A long duration of pain, particularly if it follow vomiting, and, still more, vomiting of much mucus, will mark the existence of much accessory gastric inflammation. The position of the pain varies considerably, sometimes it is in the epigastrium, where a distinct and limited tender spot can be detected by pressure. Often it is felt in the back, so that tenderness is referred to the vertebræ.

The varying conditions of the pain will be, no doubt, generally marks of the position of the ulcer. So, also, will be the attitudes of the patients during the paroxysm. We may well believe that a patient having gastric ulcer will instinctively assume such a decubitus as will obviate pressure of ingested food upon his or her tender point. Accordingly if the ulcer is, as it very commonly is, on the posterior wall of the stomach, the patient will be found lying prone or semi-prone, with the knees drawn up. I have seen several cases in which patients, complaining of violent pain in the back after food-taking, assumed such an attitude. The limits of my paper are too short to follow out other attitudes, and I will not discuss this point further.

In considering the symptom of vomiting we find, in the first place, that, as in the case of pain, the period at which vomiting occurs may, to a certain extent, indicate the position of the ulcer. Early vomiting

after food goes, as early pain, to indicate a cardiac position. Late vomiting, and, still more, vomiting occurring after several successive meals, would tend to localize the ulcer in the pyloric end of the stomach. In these latter cases the amount vomited is usually very large, appearing often to be in excess of what has been previously introduced into the stomach. To repeat, the relative importance of pain and vomiting as signs of gastric ulcer is, as I have noted, by no means uniform.

On the whole, I should be inclined to attach a higher importance to the pain than to the vomiting, while urging that every case has to be examined by itself in all its bearings.

As regards hæmatemesis, I have already noticed that in this form of gastric ulcer it occurs at long intervals and in large quantity. Here, however, qualifications are needed—hæmatemesis does not occur at all in many subjects of gastric ulcer. The non-occurrence of hæmatemesis, however, does not preclude the occurrence of gastric hemorrhage, particularly where vomiting is less marked than pain. Several times I have been able to verify the appearance of melæna where no blood was ejected by the mouth. It appears to me probable that melæna is more frequently present than identified, and that it sometimes contributes largely to the anæmia belonging to this class of disease. The occurrence of "coffee-ground" vomiting is decidedly rare in this form of affection, but where vomiting is severe, and much mucus is brought up, streaks of blood may be observed in the mucus. These probably belong rather to gastric catarrh than to the gastric ulcer itself. In the few cases of "coffee-ground" vomiting, accessory symptoms are generally present, suggesting deep extension of the ulcer to surrounding organs after the formation of adhesions. Here generally the history of the case elucidates its meaning.

In some cases, after the persistence for a considerable time of the average symptoms, either pain or vomiting or both will become generally more constant and less definitely related with food-taking. The signs of gastric catarrh will be aggravated, and very often strange variations of appetite will obtrude themselves. These generally consist in depravation rather than loss of appetite, and lead us into new ground.

I may quote a case in point. A lay-sister in a home presented, for several years, recurrently the ordinary signs of gastric ulcer. At length the pain became persistent, and had constant tenderness associated with it. Vomiting became exceedingly frequent, and blood was often present. The patient steadily developed an inordinate appetite, and a curious predilection for one kind of food. For several years she took nothing but mashed potatoes freely enriched by butter. Feeling pain and craving, she would call for this. She would partake of it freely, and feel, for an hour or so, comforted. No other food and no medicine afforded any similar relief. She was in the habit of rejecting this

magma between an hour and two hours after taking it. Her distressing conditions at once returned, and she promptly took another instalment. The process was repeated from eleven to fourteen times in the twenty-four hours. Seeing that this patient had, in the earlier stages of her illness, the ordinary signs of gastric ulcer, and investigating her later symptoms, I came to the conclusion that the ulcer or ulcers had penetrated deeply, and had led to adhesions between the stomach and adjoining organs, with the result that the walls of the stomach were prevented from collapsing when that organ was empty. Perhaps one of the uses of a paper such as this is to raise side issues of interest.

Physiological observations and general experience go to show that when the walls of an empty stomach are prevented from coming into contact, sensations of extreme hunger arise. A converse practical illustration is afforded by the fact that a tight girdle placed over the stomach diminishes the intensity of hunger in people who are not able to obtain food. I have seen one remarkable case, illustrating, to all appearances, the effects of impossibility of the stomach to contract inducing excessive hunger. An elderly gentleman was under my care for several years. He was literally the shame and opprobrium of his family by reason of his vast and inconsiderate appetite. He was accustomed to eat voraciously of whatever was set before him, with a special selection of the richest possible dishes. That he vomited freely after such indulgence made no difference to him. His one object in life seemed to be to fill his stomach, and to clog it with what might seem to be most oppressive. I had the opportunity of making a "post-mortem" examination, when it appeared that, as a result of an old abscess connected with the gall-bladder, adhesion had occurred between the stomach and all surrounding parts. When the abdomen was opened, the stomach was found to be not a movable viscus, but a large, permanent cavity, firmly bound to the adjacent organs, as if nothing like a peritoneum had ever existed. The smallest diameter of the cavity was at least two to three inches, and no pressure could have brought the mucous surfaces into contact. In the case of the lay sister I have mentioned no "post-mortem" was permitted; but the two cases were so parallel in their symptoms that I think there can be little doubt of the application.

DIAGNOSIS.—In the differential diagnosis of this form of gastric ulcer, at least three or four conditions, producing somewhat similar symptoms, have to be excluded. First, gastritis, acute and chronic; second, malignant disease of the stomach; third, the functional disorders of the stomach comprehended under the term dyspepsia; and, lastly, in a few cases, the acute dyspepsia or gastric crisis of locomotor ataxy.

To compare, in the first place, the signs of gastric ulcer with those of gastritis, acute or chronic, we may notice important differences in the character and duration of the pain. In gastritis we find an epigastric

distress of a constant character, markedly contrasted with the evidently induced pain of ulcer. The distress consists in a sensation of oppression, distention, and heart-sinking, of course more pronounced in acute gastritis, the subjects of which complain of a feeling which they describe as "bursting." In addition to these sensations, pain belongs to all three conditions; constant and grinding in acute gastritis, more or less constant in chronic gastritis, though here the milder form of the pain enables us to see that it is aggravated by food-taking. But in either case it is not relieved by vomiting. Vomiting is present in all three; constant in acute gastritis irrespective of food; frequent in chronic gastritis, usually some time after food-taking; present or absent in ulcer; when occurring therein, giving a relief far more marked than in the inflammatory conditions. The character of the matters vomited will be, in the case of acute gastritis, inflammatory. There will be little food, much tenacious and adhesive mucus; streaks of blood; and as the process advances an intermixture of pus. In chronic gastritis still much mucus, not adhesive, yellowish or opaque, this either alone or mixed with food. Mucus occurring in the vomit of ulcer will generally indicate the existence of chronic gastritis.

Palpation enables us to recognize very different forms of tenderness; this is considerable and constant in acute gastritis, very light pressure over any part of the stomach-area producing great distress. In chronic gastritis there is diffused but dull tenderness, brought out only by comparatively deep pressure, but sufficient to make the wearing of a closely fitting dress a cause of considerable discomfort. The more acute and localized tenderness of gastric ulcer has already been noticed.

There are one or two more signs of minor importance. In acute gastritis we may expect to find marked rise of temperature, headache of considerable intensity and constancy, mainly frontal in locality. Thirst as of the desert, a very foul and usually dry tongue, and a fetor of breath almost as proper to the affection as the scent of a particular flower. In chronic gastritis there is rarely pyrexia, headache is common but intermittent, and the other symptoms cannot be spoken of seriously. In gastric ulcer all this group, except headache, are usually absent, and headache, if occurring, is frontal, and coincides in time with the other symptoms.

We may next contrast gastric ulcer with the graver malady, malignant disease of the stomach. Pain is, of course, a very frequent symptom of this affection; pain mostly increasing in severity as the disease advances, and comprehending many varieties from dull to acute. It may be aggravated after meals, or it may attain its greatest intensity when the stomach is empty. But its extension is usually much larger than that of gastric ulcer. Vomiting is common, and while having a certain relation to food-taking, occurs at all sorts of intervals. There

is very often ineffective retching when no food has been taken. In considering the characters of the matters vomited, we cannot avoid thinking most of the symptom of hemorrhage, but in the first place we may notice that the vomit, whenever occurring, is usually of a strong acid reaction, and that, besides mucus, there is generally a considerable quantity of fluid, evidently a secretion of the stomach. As in the case of ulcer, the position of the new growth goes far to determine the period at which vomiting takes place; and I think it cannot be doubtful that the character of the ejecta is very much determined by the position and character of the new growth. What we see thrown up by a patient having an ulcerating new growth in the middle of the stomach, is assuredly of a very different matter from what is observed in scirrhus of the pylorus. I think, though I should not like to be too dogmatic on the point, that the acidity in both cases is excessive.

The elements of this acidity have attracted a good deal of attention of late in France and Germany. It is asserted that the acidity in cases of malignant disease is due to other substances than the hydrochloric acid which, as is generally believed, forms the main sourness of the gastric juice, various organic acids taking the place of the inorganic. And there are many who to-day believe that the existence of malignant disease, as opposed to non-malignant disease, may be fairly well recognized by studying the reaction of the gastric juice. The test most in vogue is the tetrethyl-diamido-triphenyl carbinol-oxalate, or vivid-green salt, a crystalline substance of a brilliant green color, which yields, when dissolved in water, a blue solution. Hydrochloric acid being added to such solution, effects a distinct color-change to the green. The organic acids fail to produce such a change. In applying the test, a solution of hydrochloric acid, of the strength found in gastric juice, is first applied to some of such solution in a test-tube; next, to an equal quantity of the same solution, contained in a test-tube of equal size, an equal quantity of the fluid filtered from the vomit or withdrawn from the stomach is added. A comparison of the contents of the two tubes will determine the comparative amount of hydrochloric acid present in the secretion of the stomach under investigation. It is strongly urged that a marked failure in the production of the green change is indicative of malignant disease.

During the last year, I have submitted this test to observation wherever it was possible, and have certainly obtained some interesting results; but not uniform enough to justify me in accepting the reaction as decisive, and these were cases of short previous duration, which got well under treatment, and went out without any other sign of malignant disease.

One of the difficulties of color-tests and solutions is, that the vomit in cancer very often contains blood; when this addition occurs, it is usually constant, and while, of course, varying in quantity, is not generally large.

It is mostly in the "coffee-ground" form, but sometimes in the form of small, variously colored clots. This, of course, stands in great contrast to the large hemorrhages at long intervals occurring in gastric ulcer of the young adult female.

To revert here in greater detail to an interesting point relating to the quantity of matters vomited: As in ulcer, where the malignant growth is at the cardiac end or the middle of the stomach, the intervals are short, and the amount brought up is comparatively small; but in growths near the pylorus or involving it, intervals as long as twenty-four hours, or more, are observed. The amount when vomited is very large, and the matter consists of a thin fluid with a sediment of digested matters, having a reddish-brown color. Such a vomit is generally teeming with *sarcina ventriculi*.

Tenderness is mostly found in malignant disease of the stomach. It may be acute or dull, and I believe that the intensity is very much determined by the position of the growth as well as by its nature. I believe that the ulcerative forms are the more tender, and I have certainly felt many pyloric tumors which were almost insensible to pressure. On the whole, however, tenderness, when existing, is much more diffused than that of gastric ulcer.

If we review what has so far been stated in the point of diagnosis between malignant disease of the stomach and gastric ulcer, save and except the chemical action of the gastric juice, nothing actually decisive has been put forward. The real test is the presence or absence of tumor, and the true method of diagnosis is to examine the epigastrium with the greatest care. As far as experience goes, tumor, if existing, can be felt in about seventy per cent. of the cases. The existence of a well-defined tumor, in association with more or less of the symptoms enumerated, will enable us, for the most part, to make a definite diagnosis. The tumors which escape manipulative detection are doubtless such as are situated on the posterior aspect of the stomach. Though they may here elude direct recognition, they still produce many of the symptoms described, and by pressing on deep-seated structures will introduce new signs enabling us to recognize their position.

In the final diagnosis, we have to remember that the simple gastric ulcer affects, for the most part, young women who are anæmic, but not cachectic; that cancer affects older persons of both sexes, who are generally cachectic in appearance, and have pigmentation of the skin as well as anæmia. It may be noted also that, in malignant disease of the stomach, variations in the size of that organ are much more common than in ulcer. The importance of such variations, however, will be better seen when we come to the consideration of the diffused gastric ulcer.

The various functional disorders of the stomach, comprehended under

the term dyspepsia, often simulate gastric ulcer. The two symptoms, pain and vomiting, may, in functional disorder of the stomach, be conspicuously present, but they are rarely present together. When present individually, they rarely have the same marked relation with food-taking as is observed in gastric ulcer, and if any tenderness is observed, it is not localized, and is associated with general hyperæsthesia. There is, of course, no tumor, no hemorrhage, and no fever; moreover, there are usually present associated conditions of general nervous debility, or local irritations, which may favor or determine disordered action of the stomach.

Let us turn now to the diffuse form of gastric ulcer, observed more particularly in middle-aged persons of both sexes. The symptoms here again are mainly pain, tenderness, vomiting, and hemorrhage. But the subjects are no longer simply anæmic, and, on the other hand, well-nourished; but are often cachectic and wasted. The pain is, as a rule, much less acute than in the other form of ulcer, and the vomiting much more frequent and distressing. Tenderness in the locality of the stomach and in the whole stomach-area is generally present. The matters vomited are generally intensely acid, and very frequently contain blood, either in the "coffee-ground" form, or as soft clots of various color from pink to black. Such cases present, indeed, the strongest appearance of the existence of malignant disease of the stomach, and the more favorable diagnosis can be determined only by the absence of tumor, and the favorable results of treatment.

In illustration, I may quote two cases. The first was that of a gentleman, aged sixty-four, who consulted me for a pain in the epigastrium which made his life miserable. It came on at all times, had no relation to food-taking, and when it came took, as he said, "all the life out of him." He had no vomiting, and no other symptoms of dyspepsia, and had no tumor or tenderness. I prescribed many remedies calculated, as I thought, to relieve pain; but he was no better for any of them; so I took him to Sir Thomas Watson, who prescribed citrate of iron, regarding, apparently, the symptoms as neurotic. Under the citrate of iron he speedily obtained relief, which lasted for nearly a year. Then a relapse occurred, and to pain was added vomiting, occurring at intervals, large in quantity, and with evidences of the presence of blood. Although no tumor could be detected, more than one physician came to the conclusion that he had malignant disease. His sufferings lasted several years. Eventually he died, after an operation for stricture of the urethra; and on post-mortem examination a large, shallow ulcer, presenting no signs whatever of malignant disease, was found at the pyloric end of the stomach, but not involving the pylorus. The case has been, for me, always most instructive.

Let me quote another case. About two years ago, a man was admitted

into St. Thomas's Hospital for gastric hemorrhage. He was a horse-keeper, and had had a severe jerk from the ground, when putting a bridle on a horse. The jerk was followed by severe pain in the region of the cardiac end of the stomach, and by frequent but small hemorrhage. He had suffered from gastric distress and occasional vomiting for some time previous. When I saw him, he had pain after food and subsequent vomiting. Blood was always present in the matters vomited, but not in large quantity; there was tenderness over the whole stomach-area, but no tumor could be felt. He was sent to me with a diagnosis of cancerous disease of the stomach. He was emaciated, anxious-looking, but not cachectic; nevertheless, on the whole, all his symptoms suggested malignant disease. But as I could feel no tumor, I ventured to hope that he had only gastric ulcer, and not the more serious malady. I treated him on this basis, and in three weeks he had lost all his local symptoms and had gained flesh. It is not necessary, at this moment, to enter into the details of treatment, inasmuch as I shall presently deal with them; but it may be said that he became well nourished and strong, and has frequently presented himself since, in all respects fit for work.

In many cases of this form of ulcer, gastric hemorrhage presents itself as a very serious symptom. It goes on from day to day, in addition to other symptoms and has a distinct and dangerous importance of its own. The blood often has a bright color and a spongy consistence. The reaction of the vomit is generally intensely acid. In some cases I have been inclined to associate, with the hemorrhage, the idea of an erosive action exercised by an intensely acid gastric juice. In two cases of the kind, under my care in St. Thomas's Hospital, the exhibition of alkalis has been followed, first, by cessation of the hemorrhage; second, by the disappearance of the symptoms of gastric ulcer.

PROGNOSIS.—Dr. Brinton, writing about thirty years ago, calculated from the statistics available at the time, that perforation occurred in between 13 per cent. and 14 per cent. of the cases of gastric ulcer.

There can be no doubt that his book on the subject led to a more general recognition of the disease than had before existed. Whether it be, that, instructed by his writings I, for one, have been more ready to recognize the symptoms of the affection, or, that the character of the affection varies in successive decades, I am bound to say that comparing the number of cases presenting the symptoms of gastric ulcer and the number of deaths recorded, the proportion of deaths is much smaller than that arrived at by Dr. Brinton. This perhaps is what might have been expected. When Bright made his first great generalization, everybody who had albuminuria was condemned to death. We have learned in later years to make very different estimation of the symptom of albuminuria. And I think I may safely say of the patients who come

under our care with such signs of gastric ulcer as Brinton and his contemporaries described, very few die.

TREATMENT.—We may now turn our attention to the subject of treatment, which seems to me to be of the highest importance in gastric ulcer. The people who die of the disease are generally such as have been pursuing their occupations in spite of suffering and without precaution. Here and there, I think very rarely, one will die of hemorrhage; now and again one will die of the signs of perforation. But I think that if we can once bring a patient under thorough hospital treatment, such dangers may be averted; although in advanced conditions we can never overcome the adverse influences of adhesion of the stomach to other parts, and deep ulceration.

My experience of the treatment of gastric ulcer leads me, in the first place, to attach great importance to simple physical rest. A physician is commonly called upon to deal with two very distinct classes of cases: first, those occupying beds in hospital; second, those consulting him at his own house, or coming as out-patients. The in-patients, kept in bed, and debarred from all movement that can be avoided, make much better progress than the others who are moving about. I must admit that, in private practice, I have experienced great difficulty in keeping patients as completely at rest as I could wish, and that the results of treatment of them are far less satisfactory than those obtained in hospital. I commend this point to general practitioners, who have much greater opportunities of following the patients' symptoms from day to day, than are open to the consulting physician. In practice, I hold it to be right that the consulting physician should always advise the patient to secure the care of a medical man near at hand, and under his guidance to carry out the first principle of treatment—physical rest.

Next comes physiological rest. No one can doubt that all mechanical indigestibles must be forsworn. All experience shows that, in relation to the comfort of the patient, meats, uncooked food of all kinds, all mechanical indigestibles; and stimulants must be forbidden. After this large excision, idiosyncrasies of the patient have to be considered. Some can take milk and eggs, and soft farinaceous foods with impunity, while meat juices irritate them. Some can take the meat juices and not the milk food. Some can take nothing whatever without great suffering. Those who can take the milk and egg foods may leave us easy on the subject of their nutrition. Those who can take only the meat juices have but imperfect sources of nourishment, and in these cases, as well as in those cases wherein no aliment can be taken without pain, we are compelled to administer aliment by the rectum.

Of late years a good many nutrient suppositories have been invented, and have been much vaunted. They have a certain advantage in being more easily retained than fluid enemata, when the rectum is irritable.

But, in a general way, I believe that fluid enemata are much more effective. They should consist of from four to six ounces of beef-tea and milk in equal proportions, with a drachm of Berger's "liquor pancreaticus," and should be prepared at a temperature of about 98° Fahr. Egg may be in certain cases added, and, where there is great exhaustion, a small proportion of brandy. In more than one case of gastric ulcer with severe symptoms, I have used such enemata for a month, allowing nothing to be taken by the mouth save water, with the result that the nutrition of the patient has actually improved.

As regards treatment by drugs, I venture to say that generally very good results may be obtained. The treatment must be a good deal determined by the proportion between the symptoms of gastric ulcer and of those symptoms supplemented by gastric catarrh. Supposing that we have the symptoms of gastric ulcer without gastric catarrh, I am in the habit of giving twenty grains of carbonate of bismuth with ten grains of carbonate of soda, and ten drops of tincture of belladonna, three times a day. If there be much sign of gastric catarrh, what I am accustomed to call Brinton's mixture, viz., ten grains of bicarbonate of potash, three grains of iodide of potassium, and three drops of dilute hydrocyanic acid in infusion of gentian, three times a day, is prescribed. The use of this mixture for a week or a fortnight will generally subdue the catarrh, and the subsequent use of the bismuth mixture rarely fails, in uncomplicated cases, to effect a cure.

Complicated cases will be generally much relieved by this, but rarely cured. By complicated cases I mean those to which I have already alluded, in which there are signs of adhesion or of deep ulceration. We must not forget the acute complication of hemorrhage and perforation. In the treatment of persistent small hemorrhage, I am not inclined to the use of astringents. As a rule, I should rely on a careful examination for the symptoms of the case, and should direct treatment to the removal of the causes of hemorrhage, rather than use astringents in a blind way. I should use methods for the reduction of gastric congestion, for the neutralization of the excessive acids of the gastric juice, for the relief of hepatic congestion.

In the large hemorrhages of the simple ulcer, the whole business is generally over before treatment can be instituted. But this does not mean that treatment is unnecessary. A large quantity of blood will have generally made its way into the intestines, where it proves a source of great irritation demanding instant relief. It is my practice to administer, according to the needs of the case, sulphate of magnesia, or sulphate of soda, with dilute sulphuric acid—a hinderer of decomposition—at intervals of two or three hours, until free evacuation has been obtained. These alkaline sulphates appear to me to be the most suitable aperients in all cases of gastric ulcer complicated by constipation.

Given early in the morning in warm water, they lend effective aid to the operation of the mixtures already mentioned.

In what I have said I have given from individual experience. There are some physicians who advocate the use of caustics, such as sulphate of copper and nitrate of silver. There are others who advocate the use of opium and astringents; but all I can do is to tell what, in no inconsiderable experience, has appeared to me to be the most effective mode of treatment.

I should like to add a few words on the value of iodide of potassium in the treatment of gastric catarrh, whether simple, or complicating ulcer, or complicating malignant disease. Administered with the addition of some bicarbonate of potash or soda, it is, in my experience, a drug of inestimable value. It speedily removes a simple catarrh. It thereby removes the primary obstacle to the treatment of ulcer; and, in malignant disease, it will often, for a time, so far mitigate the symptoms as to make the patient think he is being cured. I have often found it in malignant disease relieve the patient for a time, and, I think, prolong life, with marked diminution of suffering.

It will be observed that I have dealt with gastric ulcer clinically, as I undertook. The subject of the diagnosis of gastric ulcer must be constantly in the mind of the practitioner of medicine. It has been much in my mind for years. And what I have put on record here, crude and elementary as it is, represents much careful thought and long observation.

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STUDIES ON THE ETIOLOGY OF THE PNEUMONIA COMPLICATING DIPHTHERIA IN CHILDREN.¹

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THE classification of the inflammations of the lungs has assumed a new phase since the improved methods of studying the bacteria have become definitely formulated and widely practised. While formerly morpho-

¹ The statistical data on the frequency of the disease, the clinical history of the cases, and most of the children's lungs made use of in these studies have been furnished by Dr. Northrup. The microscopical and experimental work was done by Dr. Prudden.

logical distinctions, either gross or minute, between the different forms of inflammation were ardently sought after and minutely detailed, the pathologist is now disposed, while still cherishing the approved morphological data, to seek for the etiological factors which more or less definitely determine the varying phases which inflammations of the lungs may assume, and upon these to base, at least, a provisional and supplementary working classification.

Thus it has been found that that common and well-defined form of pulmonary inflammation called acute lobar pneumonia is, in a large proportion of cases at least, associated with and no doubt directly induced by the growth in the lungs, when the conditions are favorable, of a diplococcus known as the *Diplococcus pneumoniae* of Fränkel and Weichselbaum. This bacterium, as appears from the researches of Sternberg, Fränkel, and others, is a not uncommon denizen of the mouths of healthy persons.

In the new etiological classification of inflammations of the lungs, then, acute lobar pneumonia is an inflammation usually induced by the *Diplococcus pneumoniae*, and presenting in general those clinical gross and minute features which have long been known and frequently described. This form of pneumonia, while so frequently lobar in its extent and distribution as to justify its name, may, nevertheless, develop in various atypical ways, and occurring, as it sometimes does, in lobular form has still been found to be associated with the same bacteria. Whether in inciting this disease the bacteria always find access to the lungs through the upper air-passages, as seems most probable, or occasionally from the blood, we cannot yet positively say.

While, furthermore, it seems well established that the *Diplococcus pneumoniae* is the most common primary bacterial etiological factor in the ordinary acute lobar pneumonia, it is not unlikely that some other forms of bacteria, particularly the pneumo-bacillus of Friedländer, may occasionally incite the disease and cause typical symptoms and lesions.

Another form of inflammation of the lungs, protean in its phases, is that which occurs directly or indirectly under the influence of the *Bacillus tuberculosis*. That the bacteria of tuberculosis, in a great many cases at least, gain access to the lungs with dust in the inspired air, is well established.

Still another form of pulmonary inflammation, as viewed from the etiological stand-point, is the so-called embolic pneumonia induced by the lodgement in the pulmonary bloodvessels and their subsequent growth in the lung tissue of bacteria, more commonly the pyogenic cocci, brought from some other part of the body.

In these well-defined forms of pulmonary inflammation the inciting species of bacteria have been identified by cultures over and over again by various observers, so that their nature as bacterial diseases may be

regarded as well established. All of these inflammations are liable to be associated with bacteritic inflammations due to the same cause in various other parts of the body (1).

In sharp distinction to these bacteritic pneumonias stands a group of lesions, generally considered more or less loosely as inflammations, which, although sometimes remotely and secondarily, are never directly dependent upon the presence of bacteria in the lungs. Such are the chronic interstitial and intra-alveolar pneumonias, be they anthracotic or cardiac or syphilitic in origin, or due to trauma or some other local cause, such as foreign bodies, tumors, etc. We do not now speak of gummata of the lungs, of the relations of which to bacteria we are still in ignorance.

It is probable that the ordinary so-called hypostatic pneumonias are not regularly associated with the presence of bacteria. The part which bacteria play either primarily or secondarily in gangrene of the lungs is too little known to permit of a definite classification of its varying phases here. It seems hardly necessary to mention here that the lesions of the bacteritic and the non-bacteritic inflammations of the lungs are very frequently associated in the same individual.

While definite and positive researches by the improved culture methods have justified us in such a grouping as indicated above of certain of the more common bacteritic, in distinction from the non-bacteritic pneumonias, there is still a considerable number of phases of the inflammatory process in the lungs, especially those large and important groups known as the secondary lobar or lobular and broncho-pneumonias about the direct inciting cause of which we as yet know very little.

These phases of inflammation are apt to occur under a great variety of conditions as complications of other disorders. While we know a good deal about the conditions under which they most frequently occur, the bacterial studies upon them by the modern methods have been so few and so desultory that it is at present impossible to say definitely whether bacteria do or do not stand in a causative relation to many or most of them.

In acute lobar pneumonia, the clinical history, lesions, and complications of which are so well defined and typical, the presumption is decidedly against more than one species of bacteria being the common and ordinary inciting cause. On the other hand, in the lobular and broncho-pneumonias, both of adults and children, if they are bacterial in origin at all, the presumption appears rather in favor of the hypothesis that there may be many species of bacteria which may serve as the inciting cause of the lesion under different circumstances.

If we make a brief summary of the definite results which have been obtained by the bacterial studies on the secondary complicating lobular and broncho-pneumonias, rejecting for the most part the numerous simple morphological examinations, which are, from the nature of the case,

always incomplete, and considering only those which by the culture methods have led to decisive results, we shall find that while a good beginning has been made, the observations are, on the whole, very incomplete.

That localized inflammations of the lungs may be induced by the presence of anthrax bacilli, by the bacillus of glanders, and by the actinomycosis is well established, though in man in this region these forms of pulmonary inflammation are not frequent enough to be of great practical importance.

There is a form of pneumonia which is a direct propagation of the inflammatory process from the pleura (pleurogenous pneumonia) and which has been proven to be due to the same organisms as those inciting the primary pleurisy.

There are, finally, some isolated observations, not sufficiently numerous and not fully enough controlled by the culture methods to be regarded as very significant, which would indicate the probability that now and then the *Bacillus typhosis* and the *Streptococcus erysipelatos* may, in the course of typhoid fever and erysipelas, obtain a foothold in the lung and induce a more or less extensive lobar or lobular inflammation (2).

In 1886 Weichselbaum (3), in his studies on various forms of acute pneumonia, found a streptococcus in eight cases of secondary pneumonia. Two of these were lobar and associated one with rheumatism and the other with senile gangrene of the leg. The others were lobular, and associated with erysipelas, phlegmonous inflammation of the nose and mouth, progressive paralysis, and nephritis. This streptococcus appeared to him on both morphological and biological grounds to be similar to the *Streptococcus pyogenes* and *Streptococcus erysipelatos*, though he does not positively declare his belief in their identity. He names it the *Streptococcus pneumoniae*.

Neumann (4) has cultivated from the lungs in a case of simple broncho-pneumonia the *Staphylococcus pyogenes aureus* and *albus*.

In 1887 Guarnier (5) found in the lungs of a child dead of broncho-pneumonia after measles, by morphological and culture methods, a streptococcus apparently identical with the *Streptococcus erysipelatos*.

In connection with his studies on the etiology of diphtheria in 1884, Löffler (6) made morphological examinations of the lungs of several persons dead of diphtheria. In the typical hemorrhagic broncho-pneumonia of this disease he frequently found streptococci, and not the bacilli which he had found in the pseudo-membrane. As he made no cultures, however, from the lungs, these observations are not of great significance.

In 1885 Fränkel (7) cultivated from the lung in a case of broncho-pneumonia complicating diphtheria in an adult, a streptococcus which seemed to him morphologically and biologically identical with *Streptococcus pyogenes*.

Experiments on the artificial induction of lobular and broncho-pneumonia in animals by the introduction of bacteria into the lungs have been made by several observers, and will be considered later in this paper.

It would thus appear from the scattered results which we have gleaned in the literature that the logical procedure in studying the etiology of the secondary lobular and broncho-pneumonias is not to make the attempt at first to investigate every form of the disease which comes to hand under the greatest variety of conditions, but rather to attempt the systematic study of certain well-defined groups or classes of the lesion. One of the best defined, as well as one of the most important of these groups, is the broncho-pneumonia which so frequently complicates measles and scarlatina and diphtheria in children.

In connection with recent studies by one of us on the etiology of diphtheria in children (8) we have made a series of observations and experiments on the broncho-pneumonia which so frequently complicates the disease which it is the purpose of this paper to record.

FREQUENCY OF THE OCCURRENCE OF BRONCHO-PNEUMONIA IN DIPHTHERIA.

Darier (9) in 181 autopsies upon patients dead of diphtheria found broncho-pneumonia in 61 cases.

Talamon (10) in 121 autopsies found broncho-pneumonia in 69 cases.

Schrakamp (11) in 54 autopsies found broncho-pneumonia in 31 cases.

In 195 autopsies upon children dead of diphtheria at the New York Foundling Asylum, well-marked, recent broncho-pneumonia was present in 133 cases.

If we reduce these data to percentages, we see that Darier found broncho-pneumonia in 34 per cent. of cases of fatal diphtheria, Talamon in 64 per cent., Schrakamp in 57 per cent., and Northrup in 68 per cent. On the whole, then, we may say that so far as these statistics go, broncho-pneumonia is present in fatal diphtheria, as a complication, in about 55 per cent. of the cases.

These data, however, have but a limited significance, since a careful microscopical examination of the lungs of children dead with diphtheria of the air-passages shows that there may actually be a considerable amount of lobular inflammation without gross change. Thus, in the 195 New York Foundling Asylum cases there was a considerable number of lungs in which there were areas of localized congestion or hemorrhage or collapse, which a microscopical examination might have shown to be associated with slight inflammatory changes, but which, owing to the uncertainty, were not counted among the pneumonias. This condition of affairs would seem to indicate that the above percentage is low rather than high.

SEVENTEEN CASES OF DIPHThERITIC BRONCHO-PNEUMONIA
EXAMINED.

These cases have been described more fully in the paper on diphtheria above referred to, so that here only those details are given which bear directly on the subject in hand. But it should be borne in mind that, as already recorded, cultures as well as microscopical examinations were made of the pseudo-membranes in all of them, and the *Streptococcus diphtheriæ* was found, usually in large numbers, in all except Case XIV.

Cases I. to XIV., inclusive, were from the New York Foundling Asylum. Cases XV. and XVI. were from the Randall's Island Infant Asylum. Case XVII. from private practice.

CASE I.—Male, three years two months. Diphtheria following rectal abscess; death on fifth day. Autopsy: Voluminous firm pseudo-membrane in larynx, trachea, and larger bronchi. Moderate amount of broncho-pneumonia, with large involvement of bronchi. *Bacterial examination of lungs*: Small numbers of cocci and diplococci in bronchial exudate as well as in the air-spaces. *Cultures* showed large number of *streptococci*; a few *Staphylococcus pyogenes aureus* and a few stout, round-end bacilli with scattering forms.

CASE II.—Male, seven months. Diphtheria following pertussis; death on fourth day. Autopsy: Moderate amount of pseudo-membrane in trachea and larger bronchi; this in the bronchi was much softened. Broncho-pneumonia, involving right lower and part of middle lobe. *Bacterial examination of lungs*: Large numbers of cocci in bronchial exudation, and enormous numbers, single and in chains, in exudation in air-vesicles. *Cultures* show vast numbers of *streptococci* and a few *Staphylococcus pyogenes aureus*.

CASE III.—Female, two and one-half years. Diphtheria; death on seventh day. Autopsy: Pseudo-membrane in pharynx, larynx, and trachea; old and fresh broncho pneumonia in both lower lobes posteriorly. *Bacterial examination of lungs*: In areas of old broncho-pneumonia no bacteria were found. In the fresh bronchial exudation, as well as in areas of fresh and commencing consolidation, enormous numbers of cocci, single, paired, and in chains. *Cultures* from areas of fresh broncho-pneumonia showed great numbers of *streptococcus* colonies and a few of *Staphylococcus pyogenes aureus*.

CASE IV.—Male, three years. Diphtheria following pertussis, with albuminuria and broncho-pneumonia on third and fourth day; death on eighteenth day after commencement of pertussis. Autopsy: Softened membrane in large and small bronchi, with considerable old and moderate amount of fresh broncho-pneumonia. *Bacterial examination of lungs*: No bacteria found in areas of old consolidation. In the bronchial exudate, as well as in the areas of fresh consolidation, large numbers of cocci, single, double, and in chains, with a few scattering forms. *Cultures* show large numbers of *streptococci* from bronchial exudate and from areas of fresh consolidation; also a few *Staphylococcus pyogenes aureus*.

CASE V.—Young child. Diphtheria, followed by broncho-pneumonia, accompanied by umbilical phlegmon. Autopsy: Voluminous membrane in larynx, trachea, and bronchi; congestion and broncho-pneumonia in

both lower lobes. *Bacterial examination of lungs*: Enormous numbers of cocci, single, paired, and in chains, in bronchial exudation and in contents of air-vesicles in consolidated areas. *Cultures* show vast number of *streptococci* and considerable number of *Staphylococcus pyogenes aureus*.

CASE VI.—Young child. Diphtheria, followed by broncho pneumonia. Autopsy: Moderate amount of pseudo-membrane, very slight amount of fresh broncho-pneumonia, considerable amount of old broncho-pneumonia. *Bacterial examination of lungs*: In bronchial exudation few cocci and scattering bacilli; very few cocci in areas of commencing consolidation in lungs. *Cultures* show moderate number of colonies of *streptococci*, considerable number of *Staphylococcus pyogenes aureus*, and many stout bacilli.

CASE VII.—Young child. Diphtheria with umbilical phlegmon. Autopsy: Pseudo-membrane in larynx, pharynx, and trachea, loosening and softening below. Considerable amount of fresh broncho-pneumonia in both lower lobes. *Bacterial examination of lungs*: In exudation in air spaces, largely made up of red blood-cells, enormous numbers of streptococci. *Cultures* show large numbers of *streptococci*, *Staphylococcus pyogenes aureus*, and a considerable number of scattering forms.

CASE VIII.—Female, three years eight months. Diphtheria following measles; death on sixth day. Autopsy: Softening membrane in trachea, extending into bronchi. Both posterior lower lobes red and mottled with solid areas. *Bacterial examination of lungs*: Considerable atelectasis with a little exudation in scattered regions. The smaller bronchi in the affected regions are filled with pus-cells, and desquamated epithelium, mingled with a large number of cocci, single, paired, and in chains. In the air-spaces adjacent and belonging to these affected bronchi the air-vesicles are filled with cellular and granular exudation, intermingled with cocci, single and in chains. *Cultures* show large numbers of *streptococci*, with a few *Staphylococcus pyogenes aureus* and some scattering forms.

CASE IX.—Male, two and one-half years. Diphtheria; death on eighth day. Autopsy: Pseudo membrane in pharynx and larynx; no broncho-pneumonia evident to the naked eye. *Bacterial examination of the lungs*: Acute bronchitis with considerable exudation in some of the smaller bronchi. Large numbers of streptococci mingled with the exudation in the lumen of the inflamed bronchi. In the bronchioles, air passages, and air-vesicles nearest to the inflamed bronchi and belonging to the same systems were enormous numbers of streptococci and single cocci. In the air-vesicles a few desquamated epithelial and pus-cells and granular material were intermingled with the bacteria. In this case we seem to have a very early stage of the broncho-pneumonic process. *Cultures* show considerable numbers of *streptococci* and a few scattering forms of bacilli.

CASE X.—Female, one year. Diphtheria of pharynx and tonsils; enterocolitis; death on third day. Autopsy: Small amount of firm pseudo-membrane on pharynx, tonsils, and at the upper end of oesophagus. Both posterior lower lobes of the lungs show congestion and a moderate amount of scattered lobular consolidation. *Bacterial examination of lungs*: Consolidated areas in the lungs are mostly due to old broncho-pneumonia with much exudation in the smaller bronchi. In fresh exudation a few cocci were found intermingled with the cells, while in the areas of old consolidation none were discovered. *Cultures* from

the redder areas of pneumonia showed a few *streptococci*, a few *Staphylococcus pyogenes aureus* and *albus*, and some scattering forms.

CASE XI.—Female, two years. Broncho-pneumonia with apparent recovery, followed by diphtheria of the pharynx and fresh broncho-pneumonia, with death on second day. Autopsy: Irregular consolidation of the left lower lobe with congestion. *Bacterial examination of lungs*: The broncho-pneumonia was found to be largely old, but in places the exudation was fresh, accompanied by considerable congestion. In the areas of old consolidation no bacteria were found. In the air-spaces containing the fresh exudation a considerable number of *streptococcus* chains were found. *Cultures* from the lungs showed large numbers of *streptococci*, a considerable number of *Staphylococci pyogenes aureus*, and a few scattering forms.

CASE XII.—Male, three years. Diphtheria following scarlatina, tubercular peritonitis; small patch of pseudo-membrane at the base of the tongue and in the larynx and trachea; softening below. Autopsy: Both lungs showed scattered areas of congestion and partial consolidation. *Bacterial examination of lungs*: Microscopical examination of the lung showed that the consolidated areas were in large part due to the old pneumonia, while in the congested parts there was a moderate amount of fresh exudation and enormous numbers of *streptococci*, often forming large masses of snarls or chains. *Cultures* from pneumonic areas in both lungs showed vast numbers of *streptococci*, considerable numbers of *Staphylococcus pyogenes aureus* and *albus*, with a few stout bacilli.

CASE XIII.—Diphtheria, with death on third day. Autopsy: Pseudo-membrane in the pharynx, larynx, trachea, and bronchi; firm and voluminous. Moderate amount of consolidation in both lower lobes of the lungs. *Bacterial examination of lungs*: Very few scattering cocci were found in consolidated areas and in bronchial exudation. *Cultures* of consolidated areas in the lung show a large number of *streptococci* (pure culture).

CASE XIV.—Male, three and one-half years. Enterocolitis, diphtheria, intubation; death on third day. Autopsy: Moderately firm pseudo-membrane in the larynx; small amount of broncho-pneumonia in both lower lobes. *Bacterial examination of lungs*: Moderate amount of exudation in spots in the lungs, but only a very few scattering forms of bacteria, mostly stout bacilli. *Cultures* from the lungs showed considerable numbers of *streptococci*, and only a very few scattering forms.

CASE XV.—Diphtheria following measles; death on seventh day. Autopsy: pseudo-membrane in larynx and trachea; tubercular bronchial glands; consolidation of both lower lobes of the lungs; pleurisy. *Bacterial examination of lungs*: Considerable old broncho-pneumonia. In new exudation a moderate number of cocci. In areas of old broncho-pneumonia no bacteria were found. *Cultures* of the lungs show a large number of *streptococcus* colonies, a few of *Staphylococcus pyogenes aureus*, and scattering forms.

CASE XVI.—Diphtheria following measles; death in twenty-four hours. Autopsy: No pseudo-membrane; commencing broncho-pneumonia. *Bacterial examination of lungs*: Moderate number of cocci, single and in chains, in the exudation. *Cultures* show many *streptococcus* colonies and a few scattering forms.

CASE XVII.—Female, two and one-half years. Diphtheria with early development of constitutional symptoms, tracheotomy, death. Autopsy:

Voluminous pseudo-membrane in trachea; slight broncho-pneumonia. *Bacterial examination of lungs*: Microscopical examination not made, the lungs being destroyed by mistake after the cultures were started. *Cultures* of pneumonic areas of the lungs show large numbers of *streptococcus* colonies and besides these only a few scattering forms.

SUMMARY OF EXAMINATIONS AND CULTURES FROM DIPHTHERITIC BRONCHO PNEUMONIA CASES.

We thus see that the areas of fresh broncho-pneumonia in the lungs of seventeen young children, dead of diphtheria, showed, with one exception, the presence of considerable or large numbers of streptococci. The exceptional case was one in which no streptococci were found in the pseudo membranes. The streptococcus was the only form present in the pneumonic areas with such uniformity and in such abundance as to appear of significance. The streptococci isolated from the lungs in these cases present exactly the same morphological, biological, and pathogenic characters as those of the streptococci found in the pseudo-membranes from the same cases, and which have already been described and called *Streptococcus diphtheriæ* (8).

The reason for believing these bacteria to be identical with the *Streptococcus pyogenes* and *Streptococcus erysipelatos* are set forth in the paper above referred to.

CONTROL CASES.

NON-DIPHTHERITIC BRONCHO-PNEUMONIA.—For purposes of control I have made cultures from the consolidated areas in the lobular and broncho-pneumonia of young children, not associated with diphtheria (10 cases). In two of the cases the pneumonia occurred with whooping-cough, in one with erysipelas, in two with marasmus, in five without any other apparent complication. In only a few of these ten cases have I found either by microscopical examination or by cultures any species of bacteria in considerable numbers, nor were the same species found in the different cases with sufficient frequency to indicate that, whether abundant or not, they were of special significance. Thus in two of the cases there were in the pneumonic areas many of the short bacilli which are common in the mouths of children, and which I have called chain-bacilli, and in four of the cases there were very small numbers of *Streptococcus pyogenes aureus*. The streptococcus was found in only one of these cases.

This exceptional case, the only one out of ten of non-diphtheritic broncho-pneumonia examined in which streptococci, both by culture and microscopical examination, were shown to be present in the lungs, was the above-mentioned case of erysipelas. In this case, however, although the cultures showed large numbers of streptococci in the lungs as well as in the skin, liver, kidney, and spleen, in the lungs the bacteria were only found in the bloodvessels, and never in the exudation in the bronchi or

air-spaces. In this case, then, there was a general infection through the bloodvessels with erysipelas streptococci, and, although present in the bloodvessels of the lungs, they apparently have no relation either in situation or in numbers to the slight amount of broncho pneumonia present.

ACUTE LOBAR PNEUMONIA.—Furthermore, I have made cultures from three cases of typical acute lobar pneumonia in children between two and three years old. These children all died at an early period in the disease, and from the consolidated areas in all of them I cultivated enormous numbers of the pneumococcus of Fränkel and Weichselbaum. In addition to this species, in one of the cases there were large numbers, in another a few, of the *Staphylococcus pyogenes aureus*. Besides these there were only scattering forms. No streptococci were found in these cases.

NORMAL LUNGS.—Finally, I have made cultures from lungs, apparently normal, taken from the bodies of children dead of enterocolitis (two cases), marasmus (three cases). In none of these lungs have I found, either microscopically or by cultures, streptococci. In two of the cases of marasmus, the common fluidifying fluorescent bacillus of water was present in considerable numbers, and in the others only a few scattering forms.

SUMMARY OF CULTURES IN THE CONTROL CASES.

In ten cases of lobular and broncho-pneumonia in children not diphtheritic, in three cases of typical acute lobar pneumonia in young children, and in five cases dead of enterocolitis or marasmus with apparently healthy lungs (eighteen cases in all), the cultures of the lungs showed no streptococci, except in one case of erysipelas with general systemic infection; in six a few *Staphylococcus pyogenes aureus* were present. Besides, there were a few scattering forms, mostly short, stout bacilli, in the various cases.

GENERAL SUMMARY OF CULTURES IN ALL THE CASES.

We thus see that streptococci were present in large numbers in the freshly affected lobular and broncho-pneumonic areas of children suffering from diphtheria in fifteen out of sixteen cases; while in the lungs either normal or pneumonic of eighteen non-diphtheritic children placed under the same sanitary conditions no streptococci were found except in the bloodvessels of a case of erysipelas with general infection.

HISTOLOGICAL DETAILS.

In recording the results of the morphological and biological examination of the lungs in these seventeen cases of pneumonia associated with diphtheria, and placing them in contrast with similar results obtained

from the lungs in non diphtheritic cases, it has seemed wise to give only a succinct statement of the facts elicited. Some histological data have, however, been developed in the various examinations which are not without significance in connection with the general subject of lobular and broncho-pneumonia in young children.

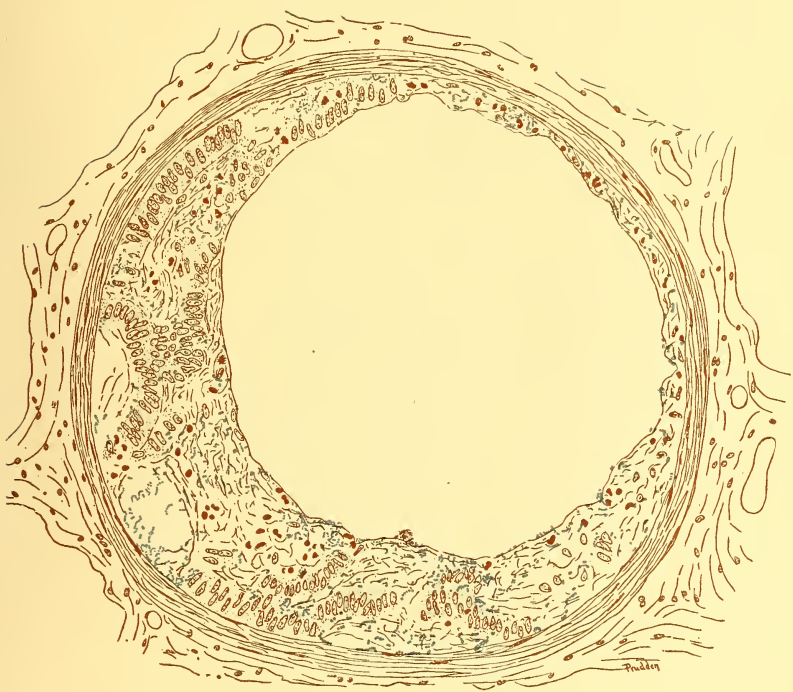
In the first place, in many of the control cases of simple lobular and broncho-pneumonia, of which that subacute or chronic form which is so common in marasmus children may be regarded as typical, neither by cultures nor by morphological examinations can we find evidence that bacteria are present or have anything to do with the lesions. In this form of pneumonia the bloodvessels in the affected regions are apt to be dilated, the walls of both bronchi and air-spaces more or less thickened, and often infiltrated with cells. While the air-spaces contain sometimes a few, sometimes many, large cells, which seem to be desquamated alveolar epithelium, neither blood nor fibrin nor pus is commonly present. This form of pneumonia sometimes is and sometimes is not associated with atelectasis. It appears to correspond in its general nature to some forms of hypostatic pneumonia in adults. Now, in many of our cases of diphtheria occurring in the New York Foundling Asylum this form of lesion was the prominent, and in many of the early fatal cases, was the only lesion evident in the gross examination.

On the other hand, I have found in the lungs of nearly all of the diphtheritic children, sometimes with and sometimes without the above form of lesion, an entirely different type of inflammation. In this inflammation in its well-marked phases there sometimes is and sometimes is not congestion of the bloodvessels in the affected regions. The smaller bronchi are apt to be more or less blocked with pus cells, and the air-spaces to contain in varying amounts pus-cells, red blood-cells, fibrin, granular material, desquamated epithelium, and bacteria. The bacteria in our cases were almost exclusively cocci, and the larger proportion of these were arranged in streptococcus form. These bacteria did not appear to be generally enclosed in the exudation cells, though often clustered close about them; nor were they often found in the walls of the air spaces, but they lay free in the exudation mass or were clinging to the walls of the vesicles. They were present sometimes in very small numbers, but often in enormous quantities.

Not infrequently only a few small areas in the lungs were involved in this way, and these were more frequently in the posterior portions. When markedly hemorrhagic in character, so that the air-spaces contain large numbers of red blood-cells, the involved areas in the gross examination of the lungs appear like areas of localized intense congestion, but they are apt to be lobular in distribution. Atelectasis was rarely observed in the regions involved in this form of pneumonia.

While in the main there is such a degree of inflammation in the

PLATE I.

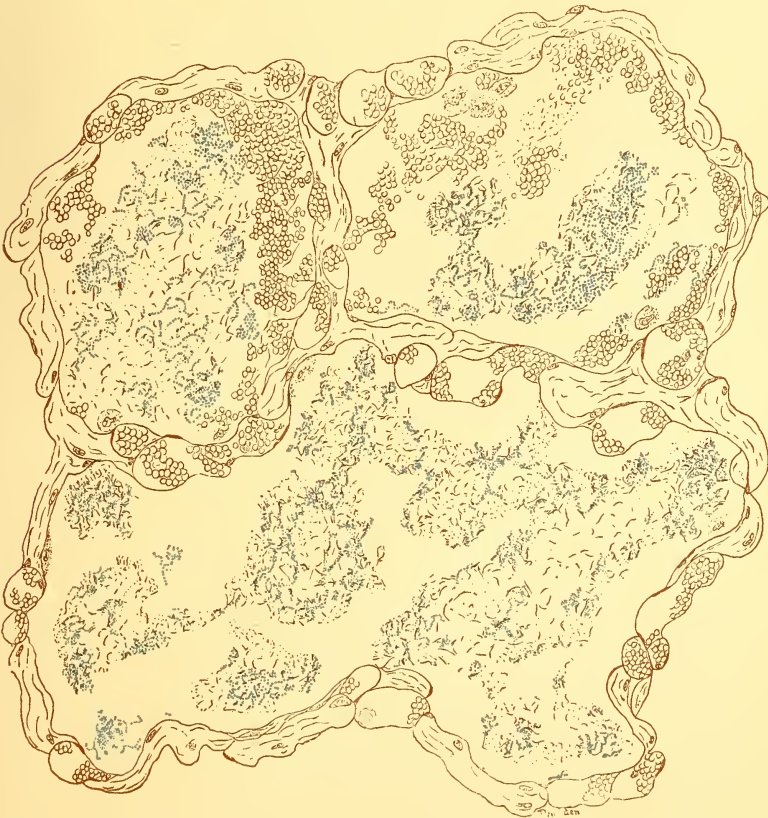


Small branches from CASE IX. Showing exudation with streptococci.



Two adjacent air-vesicles from CASE V. Showing exudation consisting of fibrine, leucocytes, and epithelium, intermingled with streptococci. (The bacteria are drawn proportionally a little too large.)

FIG. 2.



Hemorrhagic form of lobular pneumonia, CASE VII. Intermingled with the red blood cells and granular material in the air vesicles are large numbers of streptococci.

smaller bronchi as to render the designation of broncho-pneumonia applicable to the lesion, there are apt to be in most of the lungs areas of consolidation in which no change in the bronchi can be made out. Such areas of simple lobular inflammation may constitute the entire lesion in some lungs without any participation of the bronchi.

The distribution and general characters of this lesion, whether involving the bronchi or not, would seem to indicate that it is a form of inspiration pneumonia, "Schluck-pneumonie" of the Germans. This view is sustained by the observation that it was apt to be most marked and highly developed in children which had died after the pseudo-membranes in the air-passages above had begun to soften and break down.

Not infrequently one encounters in these lungs larger and smaller areas of consolidation in which the exudation is exactly of the same character as that just described, and indicative of an acute inflammatory process, but in which bacteria are entirely absent or, at least, not to be observed by any of the various means commonly resorted to. The explanation of this condition will be seen when we come to the results of animal experiments.

A very marked feature of this form of secondary broncho- or lobular pneumonia with diphtheria is the hyperplasia of the lymph nodes and nodules in and about the lungs. Not only are the larger and smaller bronchial lymph nodes (lymph glands) usually greatly enlarged, but the minute islets of lymphatic tissue (lymph nodules) which are scattered about the lungs in the interstitial tissue, as described by Arnold, are, especially in and near areas of inflammation, so large as to form prominent features in the microscopical sections.

Some of the varying phases of this form of pneumonia and the relation of the tissue to the streptococci are shown in the plates.

In Plate I. is represented a small bronchus from Case IX., in which the epithelium is nearly all detached and, together with mucus, a few pus-cells, and streptococci, forms an exudation mass partially filling the lumen of the tube. The air-vesicles adjacent to this bronchus and belonging to its system of air-spaces contained large numbers of pus and epithelial cells intermingled with streptococci.

Plate II., Fig. 1, shows two adjacent air-vesicles in consolidated areas of the lungs of Case V. In one of these vesicles the inflammatory exudate is largely fibrinous, while in the other there are epithelial and pus-cells. In both the streptococci are present in considerable numbers.

Plate II., Fig. 2, shows three adjacent air-vesicles from the lungs in Case VII., in which the exudate is largely made up of red blood-cells and granular material. Here the streptococci are present in very large numbers.

It should be mentioned here as bearing upon the theme of this paper, that the air of the New York Foundling Asylum while these researches

were in progress, was usually found to contain the *Staphylococcus pyogenes aureus* and *albus*, and in one analysis the *streptococcus* floated with the dust. Furthermore, the bacterial examination of the scrapings of the mouths and throats of children, both sick and well, who were inmates of the asylum showed that the *Staphylococcus pyogenes aureus* was frequently present in those situations in considerable numbers. While the *Staphylococcus pyogenes* was present in the lungs in a considerable number of the cases of broncho-pneumonia with diphtheria, the lack of uniformity in its occurrence and the small numbers in which it was usually found, coupled with its frequent occurrence in the air and in the mouths of healthy children, would lead us to infer that its presence in the lungs in these cases is of but doubtful significance.

Our observations thus far, then, would seem to justify us in the hypothesis that if the acute broncho-pneumonia which accompanied the diphtheria in the cases which we have examined was bacterial in origin at all, it was probably due to the entrance into the lungs through the bronchi from the local lesion above of the *Streptococcus diphtheriæ*. But plausible as this hypothesis appears to be, it is necessary to have recourse to animal experiments in order to complete its demonstration. To these let us now turn our attention.

ANIMAL EXPERIMENTS.

A good deal of experimental work has been done in the artificial production of lobular and broncho-pneumonia in animals, either by the introduction of irritating vapors or fluids or solids directly into the lungs through the trachea, or by causing the entrance into the air-passages of fluids and solids from the mouth as the result of section of the vagus nerves. To the results of these experiments I need only thus briefly refer, since our theme is limited in scope to the introduction of pure cultures of known forms of bacteria.

I have used in these experiments, which were done exclusively on rabbits, cultures of the streptococci obtained from the lungs of five of the above described cases of diphtheritic broncho-pneumonia. Actively growing beef-tea cultures from two to five days old were used.

Preliminary experiments have shown that the introduction of the streptococcus directly into the lung by a puncture of the thoracic wall, is usually followed by fibrinous pleurisy and localized inflammation of the lung about the point of puncture. But the conditions of infection in this way are so much more complex and so unlike those under which the broncho- and lobular pneumonia of diphtheria in children occurs that the details of my experiments in this direction need not be given here.

INJECTIONS OF THE STREPTOCOCCUS DIPHTHERIÆ INTO THE LUNGS OF RABBITS THROUGH THE TRACHEA.—The mode of procedure in these experiments was to sterilize carefully the skin about the neck, after cut-

ting away the hair, and then having made a small incision, exposing the trachea, to thrust the needle of the injecting syringe through its walls. From one to five c.c. of the beef-tea culture was injected, the small wound washed with sublimate or carbolic solution and bound up. The animals were held upright for a few moments after the injection in order to allow the fluid to run down into the lungs. Usually there was little or no local inflammatory reaction at the point of operation in the neck. Fifteen rabbits were operated upon in this way.

In most cases immediately after the injection coarse râles were heard over the thorax of the animals and in about one-third of the cases there was marked dyspnoea. Three of the animals with symptoms of increasing dyspnoea, loss of appetite, and progressive weakness, died, two on the second and one on the third day after the operation. The remaining animals appeared to recover rapidly from the initiatory dyspnoea, and afterward showed no sign of illness. These were killed at intervals of from three and one-half hours to ten days.

In seven of the fifteen cases no gross lesions were seen in the lungs. In the remaining cases there were larger or smaller areas of localized consolidation and congestion grouped in lobular form about the larger and smaller bronchi. In none of the cases was there evidence of any lesions of the other viscera.

If the animals were killed early—within the first twelve hours—although no gross changes, or, at most, localized areas of moderate congestion were seen, the streptococci could not only be cultivated from the lung tissue, but they were readily seen with the microscope, after staining by Gram's method, scattered here and there in considerable numbers in the air-vesicles, in the larger air-spaces, and in the bronchioles. They lay in part free in these situations, and in part were clustered about the alveolar epithelium. It was not easy to decide whether the epithelium actually contained the bacteria or whether they simply lay on the surface. I have not been able, even as early as three and a quarter hours after the injection of the streptococci into the trachea, to find any of them in bronchi large enough to be lined with ciliated epithelium.

A microscopical examination was made of the lungs of the rabbits which were either killed or died, at the following intervals after the intratracheal injection of the streptococcus, $3\frac{1}{2}$, 12, 20, 24, 28, 40, 60 hours, and 3, 4, 8, 10 days. This examination showed in general that in four out of the seven lungs in which no gross lesions were visible, there was actually a considerable amount of lobular inflammation with more or less bronchitis, and that the same condition prevailed in the lungs which showed gross lesions. But in the latter cases the inflammatory lesions were more extensive and were usually associated with congestion, thickening of the walls of the air-vesicles, more or less atelectasis, and swelling of the smaller bronchial lymph nodes.

Cultures were made in the usual way. In no case were streptococci found in the viscera other than the lungs, and after from twelve to twenty-eight hours they were found in every case to have disappeared from the lungs also.

Before twelve hours I have been unable to find any evidence of inflammation save here and there a moderate congestion of the small veins and capillaries of the pulmonary air-spaces. In animals which died or were killed in from twelve to sixty hours after the injection I have failed to find streptococci either by microscopical examination or by cultures.

The degree of inflammatory lesion in these animals varies considerably in the different cases. The smaller bronchi may contain pus and the epithelium be loosened and desquamated. The most marked and constant change is the swelling and proliferation of the alveolar epithelium in circumscribed regions. Sometimes only a small cluster of air-vesicles is involved in this way; sometimes the change is to be observed over areas of considerable extent. The air-vesicles are sometimes filled nearly full of new cells, which, from the karyokinetic figures which are to be observed in the nuclei (Plate IV. Fig. 1), I conclude to be derived from the alveolar epithelium. With these larger cells are mingled varying numbers of pus-cells and often a little fibrin (see Plate IV. Fig. 2). The adventitia of the smaller veins in certain regions is apt to be infiltrated with leucocytes (Plate IV. Fig. 1), and the lymph nodules about the smaller bronchi to be much swollen and prominent (Plate III.).

In animals killed after this period—sixty hours—when any lesion at all was found there was apt to be the same kind of exudation in the air-spaces, but the walls of the air-spaces and the smaller bronchi appear thicker than normal, and sometimes with, sometimes without, atelectasis; the lung was dense and firm in patches.

SUMMARY.—It would thus appear that the most common effect of the injection of a moderate amount of the *Streptococcus diphtheriæ* into the lungs of rabbits through the trachea is to cause a well-marked broncho- and lobular pneumonia with hyperplasia of the lymph nodules; that the bacteria disappear early from the lungs, and the pneumonia in many cases is slight in extent and evanescent; but that in a few cases the inflammation is prolonged by an involvement of the walls of the air-spaces.

INJECTION OF THE STREPTOCOCCUS DIPHTHERIÆ INTO ANIMALS' LUNGS WHICH WERE ALREADY THE SEAT OF INFLAMMATION.—In order to learn the effects of the streptococcus when introduced into lungs which were already in an inflamed condition, I have induced in another series of animals both mild and severe inflammation of the bronchial mucous membrane by the preliminary introduction of a few drops either of strong or very dilute solutions of ammonia through the trachea. This

PLATE III.

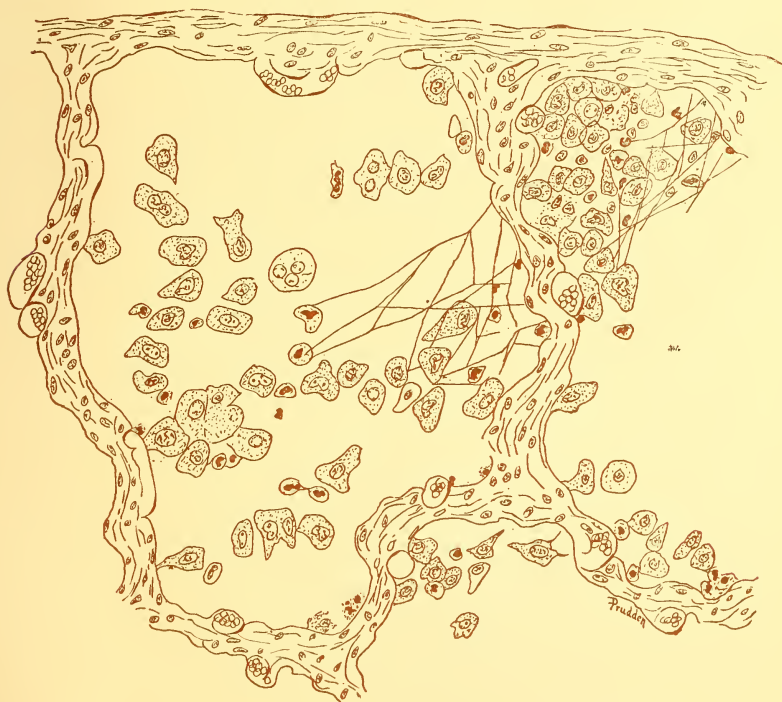


Section from lung of rabbit ten days after injection of the *Streptococcus diphtheriae* through the trachea. *a*, areas of lobular pneumonia; *b*, hyperplastic lymph nodules; *c*, bronchi.



Air vesicles of lung of rabbit dead on third day after tracheal injection of the *Streptococcus diphtheriæ*. Showing proliferation of alveolar epithelium and collection of leucocytes around a small vein. The bacteria have disappeared.

FIG. 2.



Air vesicles from lung of rabbit dead sixty hours after tracheal injection of the *Streptococcus diphtheriæ*. The exudation consists of epithelium, leucocytes, and fibrine. The streptococci have disappeared.

was followed at varying intervals by the introduction of two to three c.c. of a beef-tea culture of the streptococcus.

It is difficult in these experiments to decide how much of the broncho-pneumonic lesions which are almost invariably observed when the animals are killed after from twenty-four to twenty-seven hours are due to the ammonia and how much to the streptococci. For the preliminary experiments on ammonia injections alone showed that a broncho pneumonia very similar in character to that caused by the streptococci alone was almost always induced. The streptococci, of course, formed no part of the exudation in the air-spaces in the cases in which ammonia alone was used. In the animals which had received both ammonia and streptococci, however, the lesions are more marked and extensive, and the bacteria did not disappear so early from the lungs as when the inflammation was induced by them alone.

This fact would seem to furnish another illustration of the well-established principle that certain pathogenic bacteria maintain their existence with greater difficulty in the presence of healthy cells of the living body than when the vitality of the latter is impaired.

COMPARATIVE EXPERIMENTS BY THE INTRODUCTION OF STAPHYLOCOCCUS PYOGENES INTO THE LUNGS.—For the sake of comparison, I have repeated the above detailed experiments on animals, using, instead of the *Streptococcus diphtheriæ* the *Staphylococcus pyogenes aureus*. The cultures used were from three of the cases of broncho-pneumonia, and eight animals were injected through the trachea. Four died at from fifteen hours to three days, and in these, as well as in those which showed no signs of illness and which were killed at varying intervals, a moderate amount of lobular pneumonia was found in every case. Cultures and microscopical examinations showed that the staphylococcus was present in diminishing numbers in the affected regions of the lungs up to the third day. After this none could be detected. The general and minute characters of the lesions are similar to those induced by the injection of the streptococcus, save that pus-cells are apt to preponderate in the exudation in the air-spaces. Experiments similar to these with the *Staphylococcus pyogenes aureus* have been done by Fleck and Laehr (12), who readily succeeded in inducing circumscribed areas of inflammatory consolidation in the lungs of rabbits. They found also that the bacteria, introduced in larger quantities than in my experiments, disappeared in a short time. The appearances which they noted were interpreted as indicating the epithelium and leucocytes in the exudation as the active factors leading to the destruction of the bacteria.

While these experiments with the staphylococcus show that it, as well as the streptococcus, may induce localized inflammation of the lungs, the small number in which they were found in our cases of diphtheritic broncho-pneumonia and the inconstancy of the occurrence would lead

us, as above stated, to the opinion that while they may act as complicating agents, they are not the prominent etiological factors in the disease.

It seems not improbable from some preliminary observations which I have made on the broncho- and lobular pneumonia accompanying measles and whooping-cough, that under these conditions the *Staphylococcus pyogenes aureus* may play an important part in inciting the pulmonary inflammation.

SUMMARY.

We have seen that there is a group of secondary inflammations of the lungs called lobular and broncho-pneumonia, occurring under a great variety of conditions, about the direct inciting cause of which we know very little. Of these we have selected for our studies the lobular and broncho-pneumonia which so frequently complicate diphtheria.

Dr. Northrup has shown by statistical data, derived from the clinical and pathological records of the New York Foundling Asylum and from foreign sources, how frequent and important this complication of diphtheria is.

We have examined morphologically and by cultures the lungs of seventeen children dead of diphtheria complicated by pneumonia. The pseudo-membranes in all but one of these cases had been shown by a previous study to contain a streptococcus, which was, apparently, the cause of the diphtheria. In all but one of the cases of pneumonia the lungs contained a similar streptococcus (it was the same case which was exceptional in both series of studies). We have found no other species of bacteria in these lungs with such frequency and abundance as to justify the belief that it stood in a direct causative relation to the inflammation.

We have been able to induce in rabbits, with the greatest uniformity, by the intratracheal injection of pure cultures of the streptococcus isolated from the children's lungs a lobular and broncho-pneumonia very similar in its character to that with which we started in the children. We have found that the injected bacteria do not, as a rule, gain access, at least in demonstrable numbers, to the blood and the other viscera of the animals.

Though we have no detailed observations to record bearing upon the theory of phagocytosis, we have learned that after inciting the local inflammatory process in the lungs of the animals the bacteria rapidly disappear. This observation seems to explain why, in children's lungs which are the seat of broncho-pneumonia consecutive to diphtheria, we often find the streptococci in large numbers in some of the inflammatory foci, while in others they are few in number or entirely absent.

We arrive, finally, at the conclusion that the acute lobular and broncho-pneumonia which is apt to complicate diphtheria in the upper

air-passages in children, is, at any rate in the set of cases which we have examined, a form of inspiration pneumonia, induced by the Streptococcus diphtheriæ which finds access to the lungs from the foci of diphtheritic inflammation in the air-passages above.

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A CASE OF NEPHRO-URETERO-LITHOTOMY,

WITH REMARKS UPON THE ANATOMY OF THE PELVIS OF THE KIDNEY.

BY S. W. TORREY, M.D.,

OF BEVERLY, MASS.

MRS. M., of Beverly, whose case forms the subject of this paper, began to suffer from pyelitis some time in 1883 or 1884, when she was about forty-three years old. From the beginning up to the time of operation, pus was present in the urine, in varying amount, but never absent; and occasionally there was albumin in small amount; almost always oxalate of lime, and very frequently uric acid crystals. There were no attacks of renal colic, never any very severe pain, but always a dull aching discomfort in the lumbar region. The only medicine that alleviated the trouble much was lithiated hydrangea, which distinctly lessened the amount of pus, and gave some relief to the lumbar aching.

On January 2, 1888, after not having seen the patient for several months, I was called to attend her in an attack of acute bronchial catarrh, mainly affecting the left lung and accompanied by very distressing dyspnoea. Under treatment she was relieved in two days of her harassing cough and extreme difficulty of breathing, when she began to

complain of severe pain in the left renal region, not spasmodic in character, but gradually increasing in intensity until it became agonizing, preventing her from sleeping and from changing her position in bed. The urine, which had been loaded with pus when I was called to her, became quite suddenly clear, and remained so until after the nephrotomy. Soon there developed exquisite tenderness over the left kidney, chills, rise of temperature and pulse, complete loss of appetite, vomiting and uræmic symptoms, and, by January 6th, an obscurely defined tumor in left side of the abdomen. The urine continuing free from pus, but now showing albumin and blood, I inferred that the pus was accumulating in the left kidney, rendering it functionally useless, and that the right kidney was in a state of hyperæmia from being suddenly called upon to do double duty.

January 7th Dr. C. W. Haddock saw the patient in consultation, and agreeing in the diagnosis of abscess of the kidney, he etherized her while I passed a medium-sized aspirating needle through the back into the kidney. I was fortunate enough to strike the abscess on the first puncture, and withdrew three ounces of pus. Temperature 101° at time of aspirating. The next day the patient was comfortable, and the temperature was normal; the tumor was not so easily mapped out, but still could be found; the tenderness on pressure was less, and the uræmic symptoms somewhat relieved, but pus was still absent from the urine.

I then stated to the family that the sudden stopping of this long-continued flow of pus, without a very appreciable lessening of the daily amount of urine passed, proved that the pyelitis affected the left kidney only, and that the urine was coming solely from the right kidney, and that the cause of the obstruction must, almost of necessity, be located in the ureter to insure a complete blockade, and there was nothing so likely to cause this blockade suddenly, considering the patient's past history, as an impacted calculus; and I further stated that I considered incision and exploration of the kidney, with removal of the stone, if found, to be the only means of saving the patient's life.

Further counsel was desired, and on January 12th Dr. A. T. Cabot, of Boston, saw her in consultation. He concurred in the diagnosis and emphatically advised nephrotomy.

On Sunday, January 15th, I operated, there being present and assisting, Drs. C. W. Haddock and Stickney, of Beverly, and Drs. Johnson, Kittredge, and T. L. Perkins, of Salem. I made an incision three inches long in the lumbar region (reaching from the lower rib to the ilium) over the kidney, and on reaching that organ first aspirated the abscess, removing about 3vj of pus. I then incised the kidney and examined the pelvis with the finger, but found no stone; the pelvis was quite small and of a somewhat rectangular shape with two openings on the ureteral side, one at the lower end, about the calibre of a No. 10 catheter; the other about one inch higher up and only about half as large. These openings I searched with a uterine probe, finding nothing in the upper canal, but soon touching a stone in the lower one, about one inch from its opening into the pelvis.

Examination of the stone with the probe proved it to be much too large to draw through the small orifice into the pelvis, and thence through the incision I had made into the kidney, unless the orifice could be dilated. I endeavored to do this with the finger, but with no success;

I also tried to accomplish my object with various instruments, but I could only increase the calibre very slightly.

In endeavoring to dilate by means of a pair of curved short-bladed forceps, gradually expanding the blades, the opening suddenly tore bilaterally, and I then had room to seize and extract the stone. There was only one stone. No hemorrhage of any moment attended any of the steps of the operation. Two rubber drainage tubes were inserted, one into the pouch from which the calculus was extracted, the other in the direction of the upper opening before referred to; each tube was secured in place by a silver wire passed through the capsule of the kidney and out through the skin, thus drawing the kidney in close apposition to the external wound, so as to prevent as far as possible extravasation of the pus and urine into the loose tissues about the kidney. I then irrigated the cavity through the drainage tubes with a solution of chlorinated soda and water 1:15, continuing the flushing until the solution returned clear. The external wound was closed loosely with interrupted sutures and dressed with iodoform gauze and absorbent cotton, and the patient put into bed, with hot water bottles to the lower extremities.

There was considerable shock, which gave me anxiety for about two hours, but after that passed off improvement began at once, and there were no untoward symptoms of any sort. The temperature never rose above 98°, and for the greater part of the time was about half a degree subnormal; the urine passed by the bladder in a short time became clouded with pus, showing that the cause of the complete obstruction undoubtedly had been the stone; and the amount of pus, at first quite free through the drainage tubes, soon became much less both through the artificial and the natural outlets, proving conclusively that the old pyelitis had been due solely to the irritation from the stone.

Eight days after the operation I removed the upper drainage tube, and in five days after that I found the other one forced out of the wound, so I took it away and packed the rapidly contracting sinus with iodoform gauze: from that date the discharge diminished very rapidly (I irrigated the kidney daily as long as I could force the nozzle of a syringe through the fistulous canal) and the wound healed with a speed that rather alarmed me when I reflected upon what I had been led to think was the necessary sequel to such an operation—a slow-healing fistula. But as the urine speedily became normal in character, and as the discharge from the wound soon ceased entirely, the evidence was convincing that the removal of the stone had stopped the chronic inflammation, and that the wound had as good a right to heal rapidly as a clean-cut, aseptic wound would have in any other part of the body.

As to the treatment of the case after operation there is little to call attention to. I used Labarraque's solution, 1 to 15, for the first six days, after that a solution of boracic acid, for irrigation; I substituted oakum for absorbent cotton as a dressing, applying iodoform gauze immediately over the incision, and using it to pack the sinus after removing the drainage tubes; and at every dressing I bathed the parts with a solution of corrosive chloride, 1:3000. The stone was about the size and shape of a Spanish olive stone— $\frac{1}{2}$ in. long, $\frac{3}{8}$ in. shortest diameter.

In referring to the points of interest in this case I would allude briefly to the question of diagnosis, which is not always easy in these cases, as

has been proved occasionally when operators have incised the kidney with the confident expectation of removing a stone, and none has been found. Fortunately, in this instance, the diagnosis made itself, as I have explained in reciting the history of the case.

Another point is in regard to the shape and size of the pelvis of the kidney, which differed from the generally received idea of its anatomy as delineated by Gray, Harrison Allen, and others, particularly in its having two openings into the ureter instead of one and in being of a rectangular instead of a pyramidal shape.

Shortly after the date of my operation there appeared in *The Practitioner* an article by Mr. Jordan Lloyd, of Birmingham, on the diagnosis of renal stone, in which he states that the anatomy of the pelvis of the kidney, as given in most text-books, is entirely incorrect, and that, instead of being "a funnel-shaped membranous sac," it really consists of a cluster of branching tubes; and that the procedure of exploring the kidney through an opening into the pelvis is only practicable in dilated kidneys, and that the precise arrangement of the pelvis and ureter is as follows:

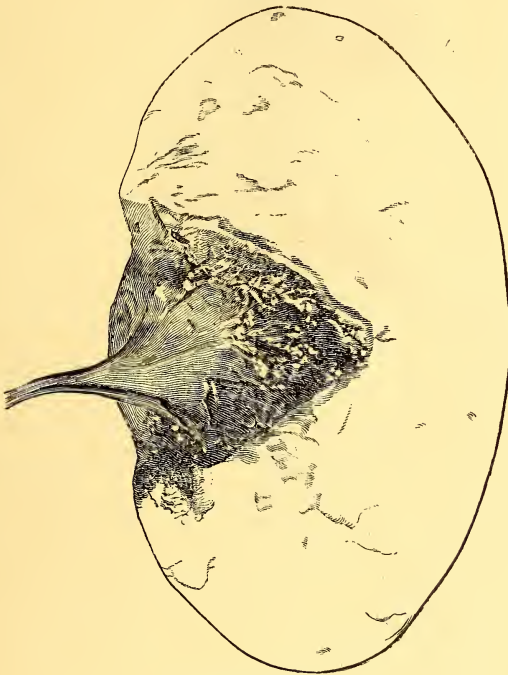
"The ureter, as it approaches the kidney, enlarges from its normal calibre—about that of a No. 10 English catheter—until it measures from one-third to one-half inch in diameter, and immediately upon entering the hilum it breaks up into two, or sometimes three, primary tubular branches, varying in diameter from a No. 10 to a No. 20 English catheter, and measuring from one-half inch to one inch and a half in length. These, in turn, give off secondary tubes, smaller in size—some less than a line in width—which end in cup-shaped calices. Sometimes tertiary branches, still smaller in calibre, shoot off from these secondary tubes, to end in calyces. With such a conception of the structure of the kidney's interior, many of the occasional difficulties with regard to symptoms, prognosis, and treatment of renal calculus are made more easy to understand."

That this "precise anatomical arrangement" is subject to exceptions is proved by the evidence my finger gave me of a rectangular sac of a capacity of about two fluidrachms, and I do not think I had to do with a dilated pelvis, for the collection of pus could not have had that effect; the kidney contained six ounces of pus at the time of operation, which caused a distention of the capsule of the kidney, filling to their utmost capacity all the tubes and calyces, but the pressure in the pelvis could hardly have been great enough to cause any great alteration in its capacity in so short a time, without also permanently dilating the tubes leading from it, and of that there was no evidence.

This pelvis, differing also from that depicted in Gray, in conformation, and in having two outlets into the ureter instead of one only, made me curious to look into the matter a little further, and I procured, through the kind favor of Professor Fitz, of the Harvard Medical School, two kidneys, both from the same subject, the pelves of which differ from each

other and from that of my case. These kidneys I have drawn (from photographs which I made of the organs) so as to show the arrangement of the pelvis and ureter of each; the illustrations are of two-thirds natural size, and Fig. 1 shows the familiar pyramidal-shaped pelvis of Gray and Harrison Allen, with the loose tissue and the parenchyma cut away so as to show the interior of the pelvis, which is slit open so as to

FIG. 1.



Typical kidney.

give a fair idea of its capacity. Fig. 2 presents the type which Mr. Lloyd considers the "precise anatomical arrangement" of the pelvis, the anatomy is quite different from that of the kidney I operated upon, and an idea of which I have tried to give in Fig. 3, where I have added to Fig. 2 the sort of pelvis my finger mapped out for me when it was hunting for the stone which I finally found in the lower of the two tubes which join in the ureter, as I have shown in the drawing.

These variations in the anatomy of the pelvis furnish valuable suggestions as to the surgical treatment of stone in the kidney, the first of which is that it is not advisable to incise the organ immediately upon uncovering it, with the expectation of finding a cavity which may be searched by the finger, for there may be no enlarged space, either funnel-

FIG. 2.



Kidney with double ureter.

FIG. 3.



Form of kidney found in Case of Mrs. M.

formed, rectangular, or otherwise; and the knife very likely will sever one or more of the tubes described by Mr. Lloyd, which will materially affect the quick healing of the wound, even if the stone be successfully removed. My own incision was particularly fortunate in not injuring the integrity of the tubes leading from the pelvis, and in part explains the extremely rapid closure of the wound, drainage by the natural channels not being interfered with, as might have been the case if the tubes had been wounded.

The second suggestion, following obviously from the consideration of the first, is that on laying bare the kidney a safer procedure is to explore the organ by acupuncture, using the knife only after locating the stone.

In the March and April numbers of *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for 1888, is an extremely interesting and valuable paper by Prof. Nathan Bozeman entitled "Kolpo-uretero-cystotomy," giving a description of a new method of diagnosis and treatment of chronic pyelitis, and detailing the history of two cases, in one of which the cause of pyelitis was stone. If I do not misunderstand the writer of this paper, he holds, with Gray, that the pelvis is a funnel-shaped membranous sac, which sac, his experiments show him, has a normal capacity of about five drachms; which may be correct for a great many kidneys, but surely not for the type which Mr. Lloyd insists is the only correct one, nor for such a kidney as Fig. 3 shows, where there is no true pelvis.

This error is of practical importance, because it affects the question of diagnosis of renal stone by a method which Prof. Bozeman says is easy and accurate; and which consists in making an artificial vesico-vaginal fistula (I refer now only to females) directly over the orifice of the ureter where it enters the bladder, and then passing a flexible steel sound or a rubber catheter through the ureter into the pelvis of the kidney. Doubtless diagnosis in this way may be easy if the kidney has a true pelvis, and if that pelvis is entered, according to Gray, by one tube only; in such a case the tip of the sound will almost surely touch any stone in the pelvis or in a pouch of the ureter; but if there is the arrangement of tubes described by Lloyd, and no pelvis, I do not see how it is possible to direct the point of a flexible sound working through the entire length of the ureter, so as to enter the several tubes one after the other in the hunt for a stone.

The treatment of chronic pyelitis by Dr. Bozeman's new method, whatever the cause, is irrigation of the kidney by means of an ureteral catheter, and the irrigation is kept up as long as there is any evidence of irritation of the pelvis and tubes. This treatment may give permanently successful results if there is no stone as a cause of the pyelitis, or if there be a stone of small size, or of friable character, located in a position from which it may be dislodged or disintegrated by the irrigating current; but if there are two entrances from the ureter to the pelvis, and the catheter

always takes the one which does not contain the stone (Prof. Bozeman uses a catheter sufficiently stiff to retain the peculiar curve given to it by the ureter on its first introduction, hence if it goes wrong first it is more than likely to keep up the error), the operator may flatter himself, on the disappearance of the pus for several days or weeks, that he has cured his patient, and proceed to sew up the fistula too soon.

Prof. Bozeman says, "By this new method of treatment the patient is exposed to but little danger in comparison to that involved in the grave operations of nephrotomy and nephrectomy." It seems to me, however, that this method, not being easy for any but an expert gynecologist, and, as I have shown, not being infallible either for diagnosis or treatment of renal stone, ought not to be tried where the symptoms point strongly to calculus, but rather that the preliminary operation of laying bare the kidney by the lumbar incision, and the careful exploration of the pelvis and tubes by means of a very fine needle is not only justifiable but preferable; for if a stone is found, and it is the sole cause of the pyelitis, its immediate extraction will probably be followed by a rapid cure, as in my own case; whereas, in Dr. Bozeman's case, in which the cause of the pyelitis was calculus, the patient was under treatment and the fistula discharging for over six months before it was deemed expedient to close it; and as the report is written only five weeks after sewing up the fistula, I think it is too soon to claim a cure.

In addition to the greater facility and, as I think, safety of acupuncture in detecting the stone, the incision into the kidney, which will be necessary for the extraction of the calculus, affords a ready way of irrigating not only the pelvis of the kidney, but, by means of a flexible catheter introduced into the upper orifice of the ureter, of flushing that canal and the bladder also, and emptying all the pus and débris through an urethral catheter into a basin.

I have to say, in conclusion, that I saw the lady who is the subject of this paper a few days ago, and was happy to find her in blooming health, such as she had not enjoyed for years before the operation.

February 25, 1889.

EPILEPSY FROM PERIPHERAL IRRITATION.

CURES BY REMOVAL OF AN INJURED AND DISEASED TESTICLE AND A FOREIGN BODY FROM THE NOSE.¹

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THE following case, which I was called to see in New Jersey, and in which I have been much interested, was admitted by Dr. Weir Mitchell to his ward in the Infirmary for Nervous Diseases; he has kindly placed it at my disposal. The following history was elicited:

CASE I.—Father's and mother's family healthy and free from nervous disease. Mother still living. The patient, a sailor by occupation, has always been a healthy, robust man; he is a Swede, forty-three years of age, and weighs two hundred and fifty pounds. He has lifted nine hundred and fifty pounds. He is a man of intelligence, clear-headed. On February 17, 1888, while loading a vessel, a bale of hay fell ten feet from the dock to the ship's deck, striking him on the right hip and forcing him to the entrance of the main hatch, the edge of which is elevated about a foot above the deck. On this edge he was caught; the pressure was expended in a line running from between his legs to the left shoulder. His right leg was broken. There were severe bruises, but no break of the skin.

The patient cannot say that his head was struck; he was, however, unconscious for half an hour or an hour, and was carried to the cabin. He had probably no convulsion at that time. The fracture was set by a surgeon, and he was sent to the United States Marine Hospital at Portland, Maine. There was great pain in the back and in the left side, and the patient had cramps from the start. The muscles of the left side of the abdomen were drawn up in knots, he says, the size of two clenched fists. He does not think the abdomen was discolored. There was no fever. The pain in the side was relieved in about ten days, but remained in the back.

From the start it was noticed that the left testicle had been forced out of its position; it could not be felt. The right one remained intact. On the eighteenth day he was seized with rather sharp pain running along the left groin into the scrotum. At this time he began to feel queer in the head and left shoulder, elbow, hand, heart, and thigh; not below the knee. He says the side felt heavy, without strength. He could not move it so well; it felt numb and tingled; he felt dizzy in the bed. This alarmed him, and he tried to move the arm as much as possible, but said nothing to the doctor about it.

These attacks of cramps and associated feelings occurred at first twice and then four times a day, and were like the aura subsequently felt at

¹ Read before the Philadelphia Neurological Society, March 25, 1889.

the onset of convulsions. This state of affairs continued without further change for forty-five days, and then the feelings grew worse. The doctor examined him carefully and found that no change in the testicle had occurred since the eighteenth day. After several consultations removal was advised but not done.

Epileptiform attacks had set in by this time, the first occurring on the sixtieth day after the accident. At this time he began to have a painful cramp in the left side. As the patient expressed it, the heart seemed to be squeezed and there was pain in the chest extending up to the left occipital region. He says that he heard a roaring sound; he then fell back in bed unconscious. Those about said he seemed to stop breathing. He was pale at first, and after a few moments began to contract his left side.

There were no violent movements, but he thinks that from what others said his left arm and side became rigid. He ground his teeth, but did not froth at the mouth or bite his tongue. He did not pass urine. He made no outcry as the attack came on. Duration of first about one minute. This was between 7 and 8 A.M.; second attack between 1 and 2 P.M.; third between 7 and 8 P.M.; fourth between 1 and 2 A.M. Two of these attacks were much milder than the first, and more like the attacks to which he had been accustomed.

He left Portland May 17th; having four attacks in twenty-four hours, generally about six hours apart. About May 23d the duration of the convulsions was two and one-half minutes. In all the attacks both eyes twitched, and the face gradually became red and bluish and swollen. He always felt drowsy after an attack, and generally slept one-fourth to one-half hour, but would wake up with more severe pain in the back. Always had an *aura*—pain up left side. Sense of contraction in the left groin; then a strange feeling about the heart, as though about to faint; dizziness in the head; no noises in the ear.

In the passage home his fits increased in frequency; jars seemed to increase them; they were worse on the steamer than on the railroad. In the steamer he thinks he had one every hour; had three in the street in Boston. About the end of June had only two attacks daily. Early in July for two weeks had only one attack daily. They did not respect any particular hour.

July 11th he had three attacks. They have gradually increased in number until Thanksgiving Day, 1888, when he had twenty-three. December 8, 1888, he had seventeen attacks. These all came between 2 and 3 P.M. and at night. His friends say that he turned and twisted about, totally unconscious, taking long, deep breaths. He was raised up for fear of smothering. The patient says he has had in some attacks a dim consciousness of what is going on. This only in the less severe attacks. He thinks that he has heard remarks made. It is said that his hands became clenched, and about the same time both legs became rigid. His face turns red and he grinds his teeth.

Condition—December 7, 1888: Cremasteric reflex present on both sides, but less on the left than on the right. The right testicle hangs lower and is of normal size. Left testicle about one-third size of the right; softer. Scrotum was never swollen. Pressure on the left testicle gives pain, which rising to the left side of head resembles the *aura* which precedes his attacks, but has never caused a spasm. Pressure below the inguinal canals more painful on the left side. No pain in the penis. Has

had only about four erections since the injury. Never has had sexual connection since accident. Thinks he could not, and thinks it would be too painful. The inguinal regions appear as usual. Pain in sacral region. Gait slow, but otherwise normal. Station normal. Knee-jerk, right, normal; left, diminished and easily exhausted. Diminution of knee-jerk in left was noticed by Dr. Bank, in Portland. Abdominal reflex equal on both sides and easily excited. Heart and lungs normal. Pulse 64; rather feeble. Stomach and bowels in good order. Never had any venereal disease. Sleep wakeful. Dreams occasionally. Has dreams while half awake, at this time has tingling. General health is good. Has not lost flesh. Urine passed three or four times in twenty-four hours; has never been able to make it standing though he has tried half an hour; reaction normal; specific gravity 1015; no albumin. Eyesight growing poor in left eye since he was hurt. Two months after the injury he began to see objects double, and shortly afterward as many as half a dozen images instead of one. He has this symptom every day to some extent. Pupils large; react to both light and accommodation. Left more sensitive to light. Ophthalmoscope shows rather pale fundus; otherwise normal. During his stay at the hospital he had most violent daily fits, always before 8 A.M.

Dr. Mitchell having decided that the diseased left testicle was the cause of the convulsions, on December 29, 1888, Dr. William Hunt removed that organ whilst fully etherized, and just before the first incision was made the patient had a distinct fit. Just before the cord was cut another fit began, but section of the cord caused it to cease.

A microscopic examination of the testicle made by Dr. A. C. Wood, of the University of Pennsylvania, showed atrophy of the glandular structure.

It is now over three months since the operation, and there has been no return of convulsions and no sensations like the aura. Strength has been restored to the left side, which had been very weak. Sexual power is normal. The only disability is from a weak back, which is the result of the severe blow received.

Dr. Charles K. Mills has kindly given me the opportunity to examine a patient of his, who during the late war suffered a severe gunshot wound nearly destroying the left testicle, and who for the last fifteen years has had epilepsy.

CASE II.—The patient, W. S. D., is now fifty-one years of age; no history of epilepsy in the family. The patient has never had syphilis or serious illness, or any blow upon the head. On June 27, 1861, a musket-ball entered the anterior part of the left thigh, eight inches below the crest of the ilium, emerged opposite the left testicle, piercing it and passing behind the right testicle, entering the inner aspect of the right thigh at the scrotal junction, and emerging eight inches below the outer right iliac crest. No bone was broken.

Thirteen years later he had his first fit. It came on without aura or other warning. He made some guttural noise, had convulsions of arms and legs, with movements of the eyes. During the attack he was perfectly unconscious. He had three convulsions the first night. Duration about half an hour, and was very drowsy afterward.

One month later he had a second attack similar to the first. Spasms have recurred at intervals of from six weeks to three months during the last fifteen years. The patient has had as many as eleven in twenty-four hours.

Examination shows an atrophied testicle about one-sixth the size of the right. Cremasteric reflex less in the right side than in the left. There is no aura or feeling referable to the testicles. Pressure on the testicle does not give pain in the head. Sexual power is as good as ever.

It may fairly be questioned whether in this case the injury and the epilepsy are in the relation of cause and effect, but I think that, in the absence of other known exciting causes, and coming on at the age of thirty-six, especially in view of the case first described, this may reasonably be placed in the same category.

Dr. Weir Mitchell has kindly given me the following communication :

CASE III.—The record of the case of epilepsy, which was cured by the removal of a diseased testicle, has recalled to my mind a case, of which, unfortunately, I have no notes, although I retain a vivid remembrance of it.

Many years ago, whilst in attendance as physician at the Pennsylvania Institute for the Blind, I was called upon to see a blind girl about seventeen years of age who was afflicted with epilepsy. The attacks were violent, so that she bit her tongue. After each attack she became unconscious and remained so for some hours. The attacks came on at intervals of not less than two days, and were increasingly frequent when first my attention was called to the condition. The girl was of rather weak mind, and had the history of a fall upon the head, to which the attacks had been attributed. A very careful examination revealed the fact that she had a purulent discharge from the left nostril. In the effort to treat this it was discovered that that side of the nose was completely occluded by a foreign body. This was extracted piece by piece, and was found to be a bean, which, in some foolish play, had been pushed up the nostril and lodged there. It had at one time begun to sprout, but this growth had manifestly been arrested by circumstances unfavorable to its increase.

The removal of the bean and washing out of the nostril with proper astringent solutions resulted in complete cure of the fits. As I remember it, she had one or two after the removal of the foreign body, but no more. These attacks were most positively of an epileptic nature, and they had nothing about them of hysterical quality. They had long been considered incurable. The case is so simple that there is really no more to tell than what I have here so briefly placed upon record.

Of course, these three cases ought to be distinguished from idiopathic epilepsy. They may be designated as eccentric or peripheral convulsions, and belong to the same category as dentition-convulsions, fits from worms, etc.

In the case of the sailor reported it took two months for the changes in the testicle to produce that degree of irritation which caused the fit. There was no special proclivity in the disposition of the patient. The

injured organ, however, produced not only in the afferent nerve but in the centre to which it is attached some interstitial change. Just what it is we are unable to say, but it was sufficient to produce motor impulses along efferent nerves.

The injured and diseased testicle was the cause of the convulsions, but the accompanying irritation was certainly not of a high inflammatory character, the organ being over tender but not actively painful. Peripheral irritations as causes of epilepsy are not necessarily accompanied by sensation. For this reason it is imperative in all cases of apparently causeless repeated convulsive attacks to seek out the points of irritation. It is the treatment of these cases for which there are tangible causes that yield the brilliant results. In an interesting communication made about one year ago on the subject of epilepsy from dental irritation, Dr. A. P. Brubaker recorded such a case, successfully treated by extraction of a carious tooth, and accounts of fifteen similar cases were collected by him.

In the case of the sailor with the injured testicle it was a matter of uncertainty whether or not the epilepsy had not become so engrafted upon the brain as to continue even after the operation. No doubt many cases of so-called idiopathic epilepsy and Jacksonian epilepsy have been reflex in their origin. In consequence of some intense reflex excitation epileptic paroxysms have come on, the cerebral cortex has discharged in a particular way, and this habit of discharge has been fixed upon certain regions of the cerebrum; and in these cases, even after the subsidence of the reflex excitement, and in some cases after the removal of the reflex cause by operation, the epilepsy which has been imposed upon the central nervous system persists. Such a case has been recorded by Dr. Mills.¹ In that instance the patient had fallen at the age of four, striking the head and injuring it. Epilepsy supervened; the convulsions were sometimes without unconsciousness, and always began in a finger of the injured hand, and extended in a peculiar order. At the age of fifteen the finger was operated upon and a neuroma found by Dr. S. W. Gross. A second operation was deemed necessary and was performed by Dr. Hearn. For at least one year the patient had the seizures as frequently as before. They then began to diminish in frequency. At this time, several years since the operation, it is reported that for two years the patient has had no convulsion.

These cases are especially interesting in view of the question of removal of the cortex. The fact that the epilepsy has been originally of reflex origin does not render a cortical operation improper, but it is, of course, not to be considered until a peripheral operation has been tried.

There is in the class of reflex convulsions a form called pleuritic epi-

¹ Trans. International Congress, 1888.

lepsy. It was first described by M. Maurice Raynaud, of Paris, in 1875.¹ It was found that the injection of weak solutions of iodine, chloral, carbolic acid, etc., into the pleural cavity in the treatment of chronic pleurisy was followed by convulsive attacks in certain cases. A partial hemiplegia has also followed such injections, and in other cases followed the convulsions. These reflex convulsions have proved fatal; the result, however, not at all due to absorption of the substances injected. It is stated that after the injection suddenly the face becomes very pale, the respiration is suspended, and the pulse is very small and scarcely felt. Generally the spasms are first confined to the face or arm of the side of the injection, but soon they become general; at first tonic, then clonic and accompanied by profound unconsciousness.

Study would doubtless bring to light many instances of the peripheral excitation of the spasms in so-called centric or idiopathic epilepsy. Echeverria believed that, on the whole, everything warrants us in thinking that in epilepsy the spasm is always induced by peripheral irritations, generally unfelt or not easily discoverable, and that, even without removing the original lesion of the disease, the fits may be subdued as long as all source of disturbance be withdrawn from the nervous system. He gives in a total of 286 a list of 28 cases of epilepsy from peripheral irritation, many of which, however, should strictly not be admitted to that class.

Herpin, whose work was published in 1852, gives no cases as from peripheral irritation in his list of 68.

Reynolds classifies epilepsy from dentition, indigestion, venereal excesses, dysentery, etc., under eccentric irritation, and records 16 cases. Hammond in 572 cases gives 21 as from dentition, 24 from blows on the head, and 4 from peripheral wounds or injuries.

Injuries of the testicles have produced reflex paralysis as well as epilepsy. Such an instance of paralysis from peripheral irritation has been recorded by Dr. Weir Mitchell³ as follows:

A sergeant was shot in the right testicle; the organ was almost entirely destroyed by the ball. He fell without pain, believing himself wounded in the back; he then became senseless, but recovered in a few minutes and could walk. The right foot, however, dragged. There was paralysis of the right anterior tibial muscle and peroneus longus.

As a remedial measure for epilepsy in general castration has been advised, and, according to Gowers, has been performed without effect.

¹ H. C. Wood: *Nervous Diseases and Their Diagnosis*, p. 110, 1887.

² Echeverria: *Epilepsy*, p. 206, New York, 1870.

³ S. Weir Mitchell: *Paralysis from Peripheral Irritation*. N. Y. Medical Journal, 1868.

REVIEWS.

THE DIAGNOSIS AND TREATMENT OF EXTRA-UTERINE PREGNANCY. By JOHN STRAHAN, M.D., M.Ch., M.A.O. (Royal Univ. of Ireland). THE JENKS PRIZE ESSAY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. 8vo., pp. 134. Philadelphia: P. Blakiston, Son & Co., 1889.

WITH but a very brief interval another work upon extra-uterine pregnancy presents itself for examination. The interest with which it will be received and read, on account of the importance of the subject, is heightened by the fact that it is a prize essay, and has proved successful, over six competing essays, in carrying off the first substantial honors of the William F. Jenks Prize Fund.

A careful and critical examination of the work has produced, we are compelled to say, a feeling of very great disappointment. We say this with the deepest regret. A good, clear work upon this subject is one of the needs of the day. Moreover, we find our opinion widely at variance with that of the Committee of Award, which was composed of gentlemen whose judgment is entitled to the greatest respect—gentlemen of the highest standing and attainments. In their report announcing the award they do not limit their decision to a relative one between the essays presented, but endorse this as one of “remarkable excellence,” and a “very valuable contribution.” Under these circumstances, it is doubly incumbent upon us to present the grounds upon which our judgment is based so fully and so carefully that our readers may be enabled to decide between the conflicting opinions. In doing so, we plead as sole motor impulses the interests of science and the promotion of knowledge of the subject.

It may be well to present at the outset what, in our opinion, should be the characteristics of an acceptable treatise upon this rapidly advancing subject, especially as it is one upon several leading points of which there are not only diverse, but conflicting, opinions. First of all would stand a due amount of original observation, either clinical, operative, or *post-mortem*. Then would come a treatment of the subject entirely free from the trammels of authority, without bias, and without a shade of that partisanship which has, in a peculiar manner, been developed in regard to some points of extra-uterine pregnancy. Such a treatise should contain a scrupulously fair statement of all sides of the unsettled questions of the subject and of the results attained by different measures of treatment, with such a presentation of evidence as would assist the reader in forming a judgment for himself.

Examined by this standard of requirements, which we cannot think severe, it will not take long to discover how faulty is the essay here presented. First of all, it does not contain one particle of original observation of any kind whatever. There is no pretence of any. Not a line,

not a word, anywhere indicates that the author ever saw a case of extra-uterine gestation, or ever examined one, living or dead. The value of the work, then, as an addition to our knowledge of the subject, is very soon disposed of.

Next, as to freedom from bias or from the influence of authority on the subject. The one marked feature of the book is its devotion to and close following of a recent writer on the subject. That writer is Mr. Lawson Tait, whose lectures upon ectopic gestation were reviewed in this journal two months ago. Mr. Tait's pathology and treatment are given here in full, without change and without addition; his opinions and views are here again presented; and not only these, but some of his weaknesses and his errors. The number of times Mr. Tait's name is mentioned is something marvellous: three times on the first half page of about twenty lines; six times on one page; upon an average, more than once to the page the book through. The doctrines of Mr. Tait are not under consideration here. We should gladly welcome evidence leading to establish some of them, both relating to hæmatocele and extra-uterine pregnancy, as simplifying much that is now complex, and clearing up much that is obscure. It is superfluous, however, to say that no amount of reiteration of these doctrines, no restatement of them by any number of writers, will cause their acceptance by the profession. And this essay is another presentation of Mr. Tait's teachings and opinions, and it is little more than this. The similarity between some portions of this essay and of the lectures on ectopic gestation is striking. For instance, on page 25 of the lectures, Mr. Tait says: "There can be, there clearly is, from the statements of those who have tried these plans [feticide by electricity and other means], neither certainty nor safety about them." On page 77 of this essay we read: "The next argument against killing the fetus is, that there is neither certainty nor safety in any of them. This is confessed by their advocates." If this statement were true, it might be allowed to pass; but it is not true—certainly, not in the general sense in which it is made. We do not know even of any individual confessions of the kind.

Having given these two general characteristics of the book, one negative and the other positive, we will follow the author somewhat closely through one or two portions. Early diagnosis is one of the burning questions of the day. The subject occupies here twenty-one pages, but we do not find it treated with that fulness and clearness which its difficulty and its importance demand. The author is not always consistent, and sometimes contradictory. He opens with the question whether a diagnosis before rupture is possible. The answer is: "Tait practically says no, or that we shall fail so often that it amounts to the same thing." Here we must come to the aid of the master as against the disciple. What Mr. Tait really says—in his lectures, at least—is, that he has never had an opportunity of making a diagnosis at that period, and he expresses grave doubts as to anybody else having made one. But here the author frees himself for a moment from the trammels of authority, and accepts the teaching of facts:

"But in the literature of the subject, of recent date, there are many cases recorded where the diagnosis was made, and verified either by rupture occurring later on, by operation, or by post-mortem examination. I do not argue from cases where cure resulted from some mode of treatment not involving opening the abdomen, although it would hardly seem sound judgment to reject all these." [P. 7.]

The steps of a diagnosis he states to be, to ascertain that the patient is pregnant and then that the pregnancy is extra-uterine. How little hope there may be for our patients, from either surgical or therapeutic sources appears immediately, when he states that "it is impossible to make a diagnosis of pregnancy with certainty till the beginning of the fourth month or the middle of the fifth, when the foetal heart becomes audible" [p. 8]—since rupture of the extra-uterine sac usually occurs before the sixteenth week. This acceptance of the foetal heart-sound as the *sine quâ non* of a diagnosis of pregnancy leads to the devotion of several pages to a consideration of new signs which may indicate this condition. Ballantyre's sphygmographic tracings are given and Hegar's signs of thinning of the lower anterior wall of the uterus, which the author thinks "would be present to some extent in the extra-uterine variety." Elevation of temperature of the vagina and changes in its color are also considered, and, finally, Rasch's discovery¹ that "pregnancy, uterine, could be diagnosticated in some cases as early as the seventh week, and in most cases after the second month, *by fluctuation in some part or corner of the uterus wherever the ovum happened to be located.*" As this sign is again twice referred to, as among our resources, it is evident that the author values it highly, nevertheless he gives no testimony of its practical value, personal or from others. "Some other fluid retained, as menstrual [of course in some part or corner of the uterus!], is the only possible source of error." He says, "One would, of course, require to be thoroughly accustomed to the bi-manual mode of uterine examination." To this proposition we yield cheerful and hearty assent.

"After offering these remarks on the subject of the early diagnosis of pregnancy in general, I have to admit it cannot often be done before the foetal heart becomes audible, before which period rupture usually takes place in extra-uterine pregnancy." [P. 10.]

There is, then, as before said, but a poor outlook for patients. But we should have liked to see here the reports in detail of some of the cases "in literature of recent date," that the reader might see what symptoms enabled the making of a diagnosis previous to rupture. A score of them may be easily found in the periodical literature of this country alone. On page 23 he says: "But certainly the diagnosis [at that period] can be made and has been made."

As to the history of the case, and the belief, on the part of the patient, that pregnancy exists, Dr. Strahan follows closely Mr. Tait, as might have been expected from the latter's pronounced views upon these points. The essayist indulges here in a fling at the "text-books." But it is not alone in the text-books that the value of the patient's belief in pregnancy has been "emphasized." Bernutz and Goupil, who were pioneers in the pathology and diagnosis of this subject, were struck with the frequency with which this feature was present, and Mr. Tait's experience upon the point is altogether singular, as should have been stated.

Dr. Strahan does not omit the consideration of the physical and vital changes in the pelvis consequent upon an extra-uterine pregnancy. The enlargement and displacement of the uterus, the open os, and the formation of a decidua, are duly but briefly considered. No especial stress is laid upon the diagnostic value of the expulsion of the latter. The characteristics of the tumor found upon vaginal examination are all given

¹ British Medical Journal, 1873.

except one. That one is the vascular condition of its walls. The active pulsation to be felt in the walls of these cysts received mention as early as the days of Baudelocque, and it is interesting to any one who will carefully study reports of cases to observe how frequently it has been mentioned as a striking feature. It is not alluded to directly in this essay, but in writing of Dr. Aveling's case [p. 20], it is said there was a "pulsating" tumor near the uterus, and the word is emphasized by italics.

"A rounded, elastic, semi-fluctuant, tender tumor behind and to one side of a slightly enlarged and laterally displaced uterus, if found to be rapidly increasing under circumstances which permit the possibility of extra-uterine pregnancy, could hardly be mistaken for anything else." . . . "If in a week or two the extra-uterine swelling had increased considerably, and shreds of decidual membrane had come away with the metrorrhagia, the case for tubal gestation would be all but complete." [Pp. 17, 18.]

These quotations, taken alone, are certainly satisfactory as to an early diagnosis; there is not a word as to the sound of the fetal heart. But after having made these clear and distinct statements, the author must again present Mr. Tait [pp. 22, 23], with his disbelief in the possibility of an early diagnosis, and his statement that "there are no symptoms in extra-uterine pregnancy before the rupture has taken place." Could devotion of a disciple to master go further than this? He here betrays the feeling, however, that possibly he goes too far in this direction, for on the following page there is a feeble protest, the only one in the book, with the statement that "I do not slavishly follow whatever he may say, unless it is well supported either by himself [!] or others."

"Tait is doubtless too confident in his own unique experience and too sceptical as to the assertions of others. We must remember that he has had only seventy-nine cases," etc.

But Mr. Tait has not, by his own testimony, had a single case for diagnosis in the early stages. What he says, therefore, upon early diagnosis is matter of opinion, of no value when clashing with actual observations.

Some other features of the author's treatment of this portion of the subject must be attributed to the same influence. Thus the infrequency of opportunity to make an early diagnosis is reiterated and dilated upon. But because, in a goodly proportion of cases, there are no symptoms until rupture comes and death speedily follows, are we to give up attempts at diagnosis altogether? Here our knowledge is lacking. We do not know the proportion of the three classes into which extra-uterine pregnancy may be divided: 1st. A very small class which go on to full term without symptoms, and are only discovered at the time of spurious labor. 2d. A larger class without symptoms until sudden collapse and death, between the twelfth and sixteenth weeks. 3d. Those in which general and severe local symptoms cause the patient to call upon a physician before this period. The author of this essay, following his prototype, gives the second class as the "vast majority of cases." We cannot assent to this, and base our dissent upon the number of reported cases in which pronounced symptoms have led to an early diagnosis and treatment. There are no figures to be given on the subject.

Some points in this division of the subject deserve commendation. Menstruation may be variously affected by extra-uterine pregnancy, and this is plainly stated and repeated. There may be either amenorrhœa,

or irregular menstruation, or profuse menorrhagia, or metrorrhagia. This was recognized by Campbell, 1842, and his statement of the fact is here twice quoted. Amenorrhœa is not, then, a necessary symptom of aberrant gestation, and we believe the fact to be generally recognized. It is stated, however [p. 11], that the text-books "usually state that there is an arrest of menstruation." In justice, the author should have given the titles of these text-books. Still, after all, we find him again recapitulating the symptoms [p. 49], giving "a sudden arrest of the menses" as one of them! And again:

"If we happened to have most of the symptoms of even early pregnancy present, and a vascular, growing, semi-fluctuating tumor at the back or side of an enlarged uterus, *with suspension of the menses for a time or two*,¹ and then irregular hemorrhages, with severe crampy pain, the diagnosis would be evident to the simplest." [P. 61.]

The value attached to these points in the history of the case is strangely at variance with what is elsewhere taught that the history is altogether unreliable and misleading. Upon this point compare the following. Writing of the early stages [p. 67] he says: "Contrary to all authors, except Tait, I would impress on the practitioner that whatever may be trustworthy, the *history* of extra-uterine pregnancy is not so." On page 55, writing of diagnosis at a more advanced period, he says: "Without the history of pregnancy it would be impossible to say what the nature of such a pelvic tumor might be." The same discrepancy may be found in the *Lectures on Ectopic Gestation*.

Far more important and valuable is the admonition, given more than once, to make an ally of time. The tumor of extra-uterine pregnancy rapidly changes. "When in doubt, wait" [p. 63], is excellent counsel.

"Doubtful cases must often arise, and the man who would omit patience or time from his list of diagnostics, providing no urgent symptoms arose, would thereby prove his shallowness of intellect." [P. 45.]

The author is correct in the opinion that the source of many errors of diagnosis, made even by eminent men, is to be found in the want of recognition of the possibility of existence of the trouble.

"What we want, above all things, is to have the possibility of extra-uterine pregnancy present to the mind. Without this, the most experienced will almost always go wrong." [P. 17.]

Further remarks of the same tenor [pp. 26, 62] are excellent. Ought not the fact that it is only of late that the attention of the profession has been strongly directed to this subject, inspire charity for errors of diagnosis which have been made in past, but not distant, days?

Enough ground has been gone over to show the manner in which the author has executed his work. The space occupied precludes entering at length upon an examination of other portions of the book. The different modes of treatment in the early stages, the efficacy and the results of the application of electricity, are most interesting subjects, but there is not space to enter upon them. It is the less necessary to examine these subdivisions here, because the author follows Mr. Tait so closely that if the reader does not happen to have this essay he can read the lectures on ectopic gestation, and it will be very nearly the same. The author

¹ The words italicized are not in italics in the original.

is generally, however, far more courteous to those from whose views he dissents. But we are sorry to find that he is not always unexceptionable in this respect. "It seems to me that Dr. Baldy has quite snuffed out the electrolysis party—that is, if they needed any snuffing out" [p. 89]. This is neither dignified nor generous. By "electrolysis party" the author undoubtedly means all those who use electricity for the destruction of foetal life, and assuming that there is such a "party," what has it to show in the way of results? Thirty-nine successful¹ cases (without puncture) with but one death after application, the death evidently not dependent upon the electricity.² It is most surprising that the essay contains no record of cases treated by electricity in this country later than the fall of 1886, when the number was only fifteen. The number now and the results are strikingly similar to those of Mr. Tait's operations for ruptured cyst—forty cases, two deaths. Now a "party" which can furnish such results as this scarcely deserves "snuffing out," even were the process possible.

The author follows Mr. Tait in his objections to electricity with singular fidelity, even to the mention of single cases, such as those of Dr. Buckmaster and Duncan Matthews. He is frank enough to say, however, that he knows of no evidence tending to show that the placenta may continue growing after the killing of the foetus [p. 75]. The only sound argument adduced against this mode of treatment is that rupture of the tube may take place after the vitality of the foetus has been destroyed, as occurred in Dr. Janvrin's case, or that it may even hasten the catastrophe. This granted fully, experience shows that this would be only an exceptional occurrence, and when rupture thus occurs the patient cannot be worse off for laparotomy than before. This part of the subject is sadly marred in two ways: first, by mingling together, in the consideration of electricity as a foeticide, its application during the early weeks with that after the fourth month or even later. It is true that the author says "the Americans have only used electricity during the first four months," but he nowhere clearly divides the two classes of cases. Second, by the evident influence of the idea that electricity stands in rivalry to laparotomy after rupture. Nothing could be further from the truth.

In one place the author of the essay shows himself magnanimous toward electricity. He speaks of it as "a noble and ingenious effort to do something for a class of cases for which medical science at the time could do nothing" [p. 89]. Its friends now believe it to be efficacious in saving women from the perils of laparotomy. But there are no such perils, according to this essay, and it is curious to see how the author agrees with every other opponent of electricity in minimizing the dangers of abdominal section. "It is a very safe procedure" [p. 90]; it is an operation "of extreme simplicity" [p. 117]; it is "not as dangerous as herniotomy, nor half so difficult" [p. 46]. He thinks it ought to be performed by every country surgeon, and the argument he makes that any medical man could perform this operation if he would only think so, approaches the sublimity of the faith-cure. For comment upon the simplicity of the operation we refer the reader to the technique given in pages 96, 97.

¹ Hawley, N. Y. Med. Journ., June 18, 1883. Brothers, Amer. Journ. Obst., May, 1888.

² Dr. Janvrin's case, Trans. Amer. Gyn. Soc., 1886.

Some portions of this essay are very satisfactory; those on treatment after rupture of the sac, and on the differential diagnosis of extra- and intra-uterine pregnancy may be mentioned. It has, however, numerous and very grave faults. The subject is not brought up to the times in most important particulars. This has already been shown in regard to the number of cases treated by electricity, and in giving the results of treatment of the condition at full term, the child being alive, the important table of thirty cases published by Dr. Robert P. Harris in this journal for September of last year ought to have found a place, but does not. There is evidence of carelessness all through the work. The notice on the fly-sheet, that as the author lives abroad he could not revise his work or read proof, will absolve him from some unfortunate substitution of words which may confuse some readers.¹ But this excuse will scarcely cover others: such, for instance, as his treatment of the antiseptic system, which we are told in one place [p. 70] "has had its day"! while in another [p. 97] a just tribute is paid to its value. But all faults are nothing compared with the author's close following of a single authority, and the spirit of partisanship which only too evidently animates him. This betrays him—we say it with the deepest regret—into misrepresentation, unfairness, and injustice. These are grave charges against an author. They should never be made without specifications. We proceed to specify: It is unjust and unfair to state that those who believe in the early diagnosis of extra uterine pregnancy hold it to be "perfectly easy" [p. 16], or to imply that they believe it can be made *in all cases*. It is unfair to attack Dr. Aveling because he held that the diagnosis of extra-uterine pregnancy is generally easier than that of the normal, and fail to state that this has also been held by other able men on both sides the water. It is a misrepresentation to state that those who make a diagnosis early depend mostly on two things: the presence of the signs of pregnancy and the absence of menstruation [p. 27], and also to say that those "who go in for electricity profess to make the diagnosis off-hand" [p. 24]. It is unfair to quote Steavenson's theoretical objections to the use of electricity as a fœticide, and not give the symptoms before and after its use in a single case of the many successful ones that have been reported. It is unfair to throw doubts on the diagnosis of cases cured by electricity without publishing the reports in detail and indicating the weak points. It is a misrepresentation by implication to write that "no electric current will restrain bleeding from an abdominal artery" [p. 102]. It is grossly unfair to write that "serious accidents have followed the use of electricity even without puncture in an alarming number of instances" [p. 88], without stating what the accidents were or giving reference to the reports of them. It is the height of injustice as well as illogical to quote Dr. Matthews Duncan's case [p. 77], and argue from it against the use of electricity when applied at a very different period of the extra-uterine gestation, and to claim [p. 81] that the issue of any single case discredits altogether any plan of treatment. But then—Mr. Tait did the same. J. C. R.²

¹ Such as rupture for impregnation, p. 12; uterine for peritoneal, pp. 61, 65; fœtus for placenta, p. 117.

² It is due to the writer of this review to state that he was not a competitor for the Jenks Prize.—
EDITOR.]

THE EAR AND ITS DISEASES, BEING PRACTICAL CONTRIBUTIONS TO THE STUDY OF OTOTOLOGY. By SAMUEL SEXTON, M.D., Aural Surgeon to the New York Eye and Ear Infirmary; Fellow of the American Otological Society, etc. Edited by CHRISTOPHER J. COLLES, M.D., Assistant Aural Surgeon to the New York Eye and Ear Infirmary. Numerous illustrations. Pp. 461. New York: Wm. Wood & Co, 1888.

IN this work the author has not attempted to present to the profession a treatise on the ear embracing the entire field of otology. He has, however, presented a large number of practical subjects in otology which must be of interest to the general practitioner as well as to the aurist. In studying the functions of the ear and its diseases, Dr. Sexton has avoided a too exclusive consideration of local conditions, with a view to separate treatment apart from the whole, "since otology in its broadest sense should embrace a consideration of the upper air-tract, of which the middle ear forms but a part, and of regions contiguous to the ear."

The author has not always used the term "chronic catarrh" in speaking of diseases of the mucous membrane generally receiving that name, preferring to consider such affections, in many instances, as neuroses. The following affections receive prominent notice in the work before us, and display much careful observation, viz., catarrh of the upper air-tract, oral irritation and diseased teeth, in their causative relation to aural diseases. Then follow the subjects of wounds and injuries of the ear occurring in warfare and civil life, and rupture of the drum-head from boxing the ears, and its medico-legal aspect. Anomalies of audition, noises in the ears and their connection with the hallucinations of the insane, are presented graphically, and the author hopes that many cases of mental aberration due to noises in the head and ears may be more easily recognized, and that a more satisfactory plan in their treatment may be adopted.

Othæmatoma occurring among lunatics, pugilists, and others, has been very fully presented, and will, it is believed, be of special interest to alienists and examiners in lunacy.

The effects of false hearing on singers, actors, lecturers, and musicians are considered, and explained very satisfactorily.

Perhaps the most important part of the work is that devoted to the operation of excision of the drum-head and ossicles for the radical cure of otorrhœa and for deafness due to chronic catarrh of the middle ear, including a full account of the literature of the subject. No one has done so much toward perfecting the technique of this operation, nor in elucidating the indications for it, as Dr. Sexton. Schwartz, Lucaë, and Kessel, in Germany, have done a good deal in this operation, but their accounts are meagre or desultory. "The results of the operation have been satisfactory, and it is hoped that its usefulness will be confirmed by experience."

In regard to "mastoid disease," the author holds that it may often be prevented by favoring drainage from the attic through the lower drum-cavity and external auditory canal. This is far preferable to resorting "to an operation for liberation of secretion through the intact cortex of the mastoid. Of course, where inflamed structures and products of the inflammatory process give rise to accumulations in the mastoid and

antrum, with great suffering from tension through the inaccessible closure of the passage into the tympanum, an opening through the unaffected cortex of the mastoid or posterior wall of the external auditory canal would be indicated. The author has seldom encountered a case of this kind. Such cases must be rare when the previous treatment has been proper."

There are also considered in this work the classification and education of school-children with defective hearing and the effect of high atmospheric pressure on the ears in tunnels, caissons, and in diving, as the increase of submarine labor makes it very important that the effect of such work on the ear be understood. We also find discussed the subject of pension claims of soldiers, sailors, and marines on account of disability from deafness.

The author acknowledges the great aid he has received in the preparation of this admirable book from Dr. Colles, to whose sole efforts we owe the complete index with which the work is supplied. C. H. B.

A TEXT-BOOK OF HUMAN PHYSIOLOGY. By AUSTIN FLINT, M.D., LL.D., etc. With three hundred and sixteen figures in the text, and two plates. Fourth edition, entirely rewritten. 8vo. pp. 889. New York: D. Appleton and Company, 1888.

THIS familiar text-book comes to us in a rather less bulky form than in former editions, and with larger, clearer type and whiter paper. Its arrangement of subjects is upon the old plan, but it requires only a casual glance to show that the author, as he states in his preface, has not merely contented himself with pruning here and there, adding a paragraph or so, and calling it a new edition, but has rewritten much of the contained text.

Dr. Flint is very frank in his preface when he says: "Although the third edition, published in 1880, is still much used as a text-book, for several years I have not been able to follow it closely in public teaching." His students might have added that he required them to read through too much at times to get at the facts in his pages. The medical reader was always delighted to follow him in his descriptions of the first researches and gradual development of anatomical and physiological knowledge of certain parts and their functions, but the student, while seeking for the most recent and exact information, was sometimes impatient of this historical retrospect.

In curtailing much of this matter as found in his earlier editions, the author has also avoided another confusion of ideas which, despite the supposed progress made in the use of the metric system, is still a stumbling-block to the medical student, and the elder practitioner who reads his work will certainly appreciate it—that is, he gives the old system of English weights and measures, with their equivalents in the metric system in parentheses. He adopts the new chemical nomenclature.

Dr. Flint does not consider the value of a text-book as materially enhanced by elaborate descriptions of apparatus and methods, except as

they involve principles of general physiology. We agree with him in his general statement, but think he might to advantage have illustrated his text a little more fully in this direction. We are glad to see the admirable selections from Sappey retained among the illustrations. They undoubtedly added a good deal to the reputation of former editions.

Under "Circulation," in giving the causes of the first sound of the heart, Dr. Flint considers the valvular element to be so definite and positive as not to be entirely controverted by the experiments of Yeo and Barrett (1885), who, as quoted, declare "it is impossible for any tension of the valves to contribute to its production." The last American edition of Yeo (1888) agrees with Flint in this particular by stating "it would appear probable that both the tension of the valves and the muscle are concerned in the production of the first sound." Wherever the study of the capillaries and of endothelium is met with, Flint adheres to his earlier teachings and almost entirely ignores the presence and use of stigmata or stomata. He gives the process of diapedesis, but leaves it to a few words of uncertain import.

Under "Respiration" it is interesting to find that the observations made by Dr. Mays (*The Medical News*, January 7, 1888) upon the chests of eighty-two Indian girls who had never worn tight clothing, are admitted as seeming to show, in opposition to the views of Hutchinson and others, that the predominance of the superior costal type in the female is confined to civilized races, although, as a saving clause, the author considers that females accommodate themselves most readily to this type, which is probably provisional in its nature as protective against the influence of pregnancy upon the respiratory organs.

In considering "Alimentation and Digestion," testimony additional to that of Hayes as an Arctic explorer is quoted from Greely (1887), regarding the use of alcohol: "The regular use of spirits, even in moderation, under conditions of great physical hardship, continued and exhausting labor, or exposure to severe cold cannot be too strongly deprecated."

In considering the size, shape, etc., of the stomach, we should like to see noticed the statements of Leuf (*The Medical News*, April 16, 1887) that this organ, in the normal position, has its pyloric orifice not more than an inch to the right of the median line; and his description of the tubular form assumed at times by the stomach, would seem to deserve attention in the discussion of this subject. In this division of the work the diagrammatic plates of Sappey on glands and follicles have happily given place to others more in accordance with histology. It would have been well if this had been adopted also in treating of the intestine. The examination of the feces claims considerable attention, and Pasteur's study of the microorganisms and the part they play in actual digestion receives consideration. Our author repeats his consideration of stercorine and its formation from cholesterine, affirming that cholesterine does not exist in the normal evacuations; in which statement he is not generally supported by other physiologists.

The definition of the physiological anatomy of the kidneys has been very much improved, and gives a clear and comprehensive view of the subject. The discussion upon urea and its origin remains pretty much as in former editions; in this connection the author accepts the views of Oppenheim (1880) as regards the influence of muscular work upon the elimination of nitrogen, as going far to harmonize the results obtained by different experimenters. Oppenheim concludes that muscular work,

when not carried to the extent of producing shortness of breath, or when moderate and extending over a considerable length of time, does not increase the elimination of urea; but that even less work, when violent and attended with shortness of breath, increases the discharge of urea—*i. e.*, moderate work draws upon the oxygen, and largely increases the elimination of carbon dioxide; violent work consumes the tissues represented by the discharge of urea.

The use of the spleen, aside from the formation and destruction of blood corpuscles, is still considered as unknown, and the theory of its connection with the pancreas in forming trypsin is not thought worthy of notice. The connection between the thyroid gland and myxœdema (Ord) is given, with Horsley's experiments upon the extirpation of that gland in dogs and monkeys. Sappey's illustration of the thyroid and thymus glands, *in situ*, is introduced here to advantage, as so few students obtain a correct idea of their relations.

In considering the "Spinal Cord" much new matter has been introduced, although the reflexes are touched upon in a very general way, and there is no definite reference to the inhibitory fibres, or, in discussing brain centres, to the tubercula quadrigemina, or their influence upon inhibition or emotional expression. The encephalic ganglia, convolutions, and localizations are given very clearly.

Loring has contributed to the section on "Vision" and the visual apparatus, by a clear and comprehensive figure, illustrating his text, on the bloodvessels of the retina, and by his discussion of the researches of Boll, Kühne, and Ayres upon the visual purple and visual yellow.

For the centre of vision Flint adopts the views of Hun—the lower half of the cuneus and the adjacent part of the median occipito-temporal convolution; that the action of the cortex of the convex surface of the temporal lobe is the psychical visual centre; and that the angular convolution is not a visual centre, as it only affects the memories of the appearance of written or printed words.

We have extracted thus far to show the improvement in the work itself; that its author appreciates the general progress made in researches upon physiology; and that his text-book warrants the high position it has always held among books of reference.

W. L.

DE L'HYPERTROPHIE DES AMYGDALES (PALATINES, PHARYNGÉE, LINGUALE). Par le DOCTEUR PAUL BALME. 8vo. pp. 155. Paris: Steinhil, 1888.

HYPERTROPHY OF THE TONSILS. By DR. PAUL BALME.

THIS is a rather pretentious treatise upon a limited subject. The author describes as tonsils all the masses of lymphoid structures grouped in the pharynx and in the base of the tongue. We are of the opinion that the term tonsil should be specifically limited to the tonsil proper. While exception has not been taken to the term pharyngeal tonsil given by von Luschka to the mass in the fornix in the larynx, exception can well be taken to extending the term in describing the masses at the pha-

ryngeal orifice of the Eustachian tube as the tubal tonsil, and the masses in the root of the tongue as lingual tonsil. There would be equally good reason for describing Peyer's patches as the intestinal tonsils, which would be an absurdity, although they have precisely the same structure. Prof. Leidy's simple designation, lymphoid nodules, which describes the structures and indicates their form, is much to be preferred to that of tonsil, which is neither descriptive nor characteristic.

The subject is treated quite methodically. The volume begins with an anatomico physiological study of the structures in question, followed by an exposition of their pathological anatomy. Then comes a clinical study of the physical signs, functional disturbances, varieties, course, prognosis, and diagnosis; short chapters on etiology and on treatment respectively; and succinct notes of thirty-one observations, chiefly personal. The principal point of interest that we note is the fact that the author has observed in the feeble-minded and idiotic inmates of the Colony of Vaucluse marked hypertrophy of these lymphoid structures and especially of the longitudinal groups which are found behind the posterior palatine folds. Out of 113 inmates, 56 presented either adenoid vegetations or enlarged tonsils, or more frequently both conditions; to which granular pharyngitis was added, veritable columns of adenoid tissue along the posterior and lateral walls of the pharynx. The author believes that the congenital obstruction of the nose in these subjects renders these tissues more accessible to exterior agents and places them in a condition which predisposes to hypertrophy. He believes that the facial and skeletal deformities so often accompanying the condition are but part and parcel of the same physiological deficiencies, and not results of the hypertrophies of the adenoid structures. He has seen similar facial and cranial deformities coexisting under similar conditions in intelligent families; but, strange to say, limited to those children who have inherited the father's nose, retracted or rudimentary for two or three generations, while their brothers and sisters who have inherited the nose of the mother were free from adenoid hypertrophies.

The treatment recommended for enlarged tonsils is excision with the amygdalotome in children from two to five or six years of age who cannot support ignipuncture, and electropuncture in all others; this being the practice followed by Ruault, whose lead the author seems to have followed throughout. The main cause of hemorrhage in amygdalotomy is duly recognized in accidental section of the palatine folds. To avoid this, the selection of an instrument is urged with a ring not large enough to risk embracing the fold in any given instance; and the avoidance of pressure against the fold during the section of the tonsil. Both hints are exceedingly valuable. Ignipuncture with the electric cautery is recommended after the method employed by Ruault, chief of service in the laryngological clinic at the Parisian Institute for Deaf-mutes. The electrode consists of a long loop of thick platinum wire pressed into a very blunt point. The battery is strong enough to bring this loop to a white heat for a length of about two centimetres. It is to be pressed into the tonsil in such a manner as to transfix it from before backward parallel to the lateral wall of the pharynx; care being taken to secure two apertures, one of entrance and one of exit, so as to avoid penning up any consecutive inflammatory products. Four to six cauterizations are made in each tonsil at a sitting, and from three to six sittings suffice at intervals of ten or twelve days. The procedure is usually exsanguinous;

and slight bleedings are restrained by reapplications of the cautery at a red heat. Febrile reaction follows in some cases, with after-pains and dysphagia. Projections remaining after subsidence of the hypertrophic condition are treated by electric cauterizations of the surface.

Adenoid tumors of the rhinopharynx are excised in several sittings with cutting forceps, and any remnants are scraped off with curettes sharpened laterally at their superior surfaces; a practice which is most commendable. With very young and indocile children chloroform is administered, the mouth kept distended, a position chosen to favor free discharge of the blood, and the endeavor made to complete the operation at one sitting. Hypertrophied lymphoid nodules of the tongue are treated by applications of the electric cautery.

Dr. Balme has thus written a reliable monograph which is evidently the outcome of considerable literary research, and some close personal observation; and which, while presenting but the single novelty mentioned in connection with etiology, accords with the anatomico-pathological and therapeutic views entertained by the majority of physicians who are practically familiar with the subjects discussed. J. S. C.

TRAVAUX D'OBSTÉTRIQUE DU DOCTEUR A. AUVARD, Accoucheur des Hôpitaux de Paris. 3 vols. 8vo. pp. 524, 572, 539. Paris: Lecrosnier et Babé, 1889.

OBSTETRIC WORKS. By DOCTOR A. AUVARD.

THESE volumes contain a collection of monographs on many different subjects in obstetrics, without the slightest connection with one another, and arranged without any attempt at classification under general heads. Some of them have already been published in French journals. These are contained in Vol. I. The second and third volumes contain articles published for the first time.

The papers indicate great industry and close observation. Many of them will be of value to the students of obstetrical literature. That these volumes, however, will meet with a large circulation, we doubt. The articles, many of them on comparatively unimportant subjects, are too long for the general reader. There is, on the one hand, too much with which any educated obstetrician is perfectly familiar, while on the other hand, the work is too voluminous for the undergraduate in medicine. The style in which much of the book is written would indicate that it was intended for students preparing for their graduation, and yet, as has been stated, the work is quite unsuited, in this country at least, for this class of readers. There are quite a number of illustrations through the text, of very unequal merit. Some of them are good, others so bad that it is impossible to understand them without a careful reading of the accompanying text.

It would be impossible to give even a slight summary of the many different "works" in the three volumes. There are thirty-four in Vol. I., four in Vol. II., and five in Vol. III. The subjects treated in the last two volumes are "Obesity and the Puerperal State," "The Mechanism of the Escape of the Shoulders," "Intra-uterine Tampons," "A Contri-

bution to the Study of the Fœtal Appendages, of the Placenta, of Lacerations in the Vulva after Delivery, and of the Height of the Uterus during the Puerperium," "Extraction of the Fœtal Head," "Of Presentations in General, and in Particular of Those of the Forehead and of the Abdomen," "Lateral Obliquity of the Pregnant Uterus," "Sudden Death in the Puerperal State," and the "Diagnosis of the Stage of Labor."

B. C. H.

THE SKIN DISEASES OF INFANCY AND EARLY LIFE. By C. M. CAMPBELL, M.D., C.M. Edin., etc. London: Baillière, Tindall & Cox, 1889.

THIS small volume, as the author states, has been written for the purpose of presenting in a lucid and concise manner the various cutaneous diseases common to the earlier years of life. It cannot be said, however, that the selection of the various subheadings under which the matter is presented, has been one entirely devoid of obscurity, as, for instance, Chapter IV.: "Chronic non-febrile bacterial diseases," and Chapter VI.: "Diseases initiated by lesions of the epidermis and its involutions." It is a misfortune with books of this kind that the aim at conciseness often compromises their value. Brevity is desirable; but when discussing certain subjects and certain diseases—notably skin diseases—it is often at the sacrifice of clearness, and this, we think, is the weakness of the book before us; for while containing suggestive matter that will prove of value to the general reader, it unfortunately contains also much that will fail of giving a clear and intelligible understanding of the subjects presented.

HAND-BOOK OF HISTORICAL AND GEOGRAPHICAL PHTHISIOLOGY, WITH SPECIAL REFERENCE TO THE DISTRIBUTION OF CONSUMPTION IN THE UNITED STATES. Compiled and arranged by GEORGE A. EVANS, M.D., Member of the Medical Society of the County of Kings, N. Y. 12mo. pp. 295. New York: D. Appleton & Co., 1888.

THE author states in his preface that "this treatise is made up, to a great extent, of the observations of others, and for the most part in their own words." In fact, the extent to which it is not made up of such observations is infinitesimal. Waldenburg's treatise on tuberculosis, Hirsch's *Handbook of Historical and Geographical Pathology*, and the *Tenth United States Census Reports* furnish nearly all the material.

Statistics of mortality and meteorological reports have little interest to the physician except as leading to certain practical therapeutical conclusions, and these are not forthcoming in this volume.

In conclusion, the author expresses the belief that the respiration of antiseptic air is the proper treatment for phthical subjects, and indulges the hope that medical science may yet be able to fulfil this indication.

One may be permitted to doubt, as did Dickens's charity boy with reference to the alphabet, whether it is worth while to have gone through so much to learn so little.

F. P. H.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

PYRODIN.

It is interesting to look back upon the recent history of various antipyretics. When salicylic acid was first used its application was very general, but gradually it was employed in a narrower and narrower field.

Next the dihydroxyl derivatives of benzol were studied, and there appeared pyrocatechin, resorcin, and hydrochinone; they were soon shown to be unsuitable as antipyretics; then the bases of the quinine group were investigated, and chinolin (1881) was made by heating quinine with alkalis. From chinolin two phenols were prepared, one of which served as the basis of kairin (1882), the other of thallin (1884). Finally the last member of this group was prepared synthetically by Knorr, oxydimethylchinicin, or antipyrin (1884).

There is at present a third group of three which are derived from anilin—acetanilid or antifebrin (1886), and similar to it, phenacetin or acetphenetidin (1887), and most recently pyrodin, a mixture of which the active portion is acetylphenylhydracin.

Dreschfeld found that pyrodin caused albuminuria and jaundice in animals, and methæmaglobin was found in the blood. Lepine also found methæmaglobin, and after large doses the number of red blood-corpuscles was diminished. He also considered that pyrodin lessened the formation of glycogen. Dr. Zerner and Dr. Sternberg found that rabbits, after doses of about three grains, died in two days with dyspnœa.

In the Vienna Hospital Dr. T. J. Zerner has observed the effects of this drug in fifty-three cases, mostly of acute disease. Two preparations were used, the daily amount of pyrodin pills was from three to twenty grains; of the pure substance from one and one-half grains to seven grains; these doses could not be continued more than two, or at the most three days, without bringing on toxic symptoms. Both preparations proved to be powerful antipyretics; the fall of temperature was ushered in by profuse sweating;

collapse did not accompany the depression of the temperature in any case. After half an hour the temperature began to go down, reached its minimum in from two to three hours, after which it usually rose quickly, and in two or three hours had reached the point from which it started.

In the pill form of pyrodin, a dose of eight to fifteen grains corresponded to one of three to six grains of the pure substance. The remissions from pyrodin came more slowly, were not as marked, and continued longer, and the rise was less abrupt.

At times, on the other hand, the pyrodin did not have any influence upon the temperature, or only a slight and transitory one, and marked toxic symptoms were induced. In continued fevers the action was less marked than where it was remitting in its character, especially in the hectic fever of phthisis; also when administered so as to correspond with the daily remission in temperature, the action was marked; the temperature was sub-normal, a total reduction of four degrees was not seldom observed. The apyrexia continued for some time, and did not reach the point from which it started for eight or ten hours. It was not found practicable wholly to abort the exacerbations of the fevers, at least with such doses as were unaccompanied with toxic symptoms.

It is better in every case to administer a single dose, as it is more effective than several smaller doses. The sweating, which was always profuse, began ten to twenty-five minutes after the administration of the pyrodin, usually starting on the head and neck, and seldom continued so long as the sinking of the temperature. It was especially abundant in patients with phthisis and was, as a rule, well borne by the patients, except that they were disturbed by the frequent change of clothing which it necessitated.

With atropin or agaricin the diaphoresis was less. As a rule, the sweating did not occur in patients who were without fevers. The drug had little or no influence on respiration. As a rule, the pulse diminished in frequency with the fall of temperature, and usually with an increase in tension, though not always. The urine was often increased in spite of the profuse diaphoresis. Its color was reddish-yellow, and it gave the red color with chloride of iron, similar to that obtained in the urine of patients taking antipyrin. Sulphate of copper was reduced.

On the course and duration of the disease the results were unfavorable. In pneumonia, although extraordinary care was used, the course of the disease was more severe than under the expectant treatment.

In erysipelas the course of the disease was not changed, nor was the temperature controlled to a marked degree.

In a case of subperiosteal abscess of the tibia, with high fever and suffering much pain, the temperature could be reduced, but the pain did not abate. The drug was without influence on the temperature of a patient with malarial fever. In three cases of acute rheumatism the temperature was easily reduced, but the pain was not relieved to any considerable extent.

The action of the drug was most marked and certain in tuberculous patients, but here extreme care was necessary, and the smallest practicable doses could not be continued for more than three days; it was then necessary to withdraw it for at least a corresponding period.

In typhoid fever it was easy to lower the temperature, the subjective symp-

toms, with the pulse and respiration, were in some cases improved; collapse and rigors were not observed.

On the other hand, in the greater number of cases, malaise, indifference, dizziness, delirium, and a marked unfavorable action on the pulse were noted, in spite of the lessened temperature. Convalescence was not promoted.

To relieve various painful affections the pyrodin seems to be of little value.

Taking the experience of this careful study as a whole, we are led to the conclusion that pyrodin is very efficacious as a means of reducing temperature; compared with antifebrin, it has the great disadvantage of being more toxic in its effects.

In typhoid fever it should be wholly discarded; in pneumonia, scarlet fever, and measles, it is not required. In tuberculosis and other chronic diseases, accompanied with fever, it has marked limitations, as it cannot be given for more than a very few days at a time. In rheumatism it is far behind salicylate of sodium, and, as an analgesic, is not to be compared with antipyrin or antifebrin. Since pyrodin presents no advantages over other antiseptic drugs, but, on the contrary, easily exhibits toxic properties, it will doubtless soon be among the many obsolete or forgotten drugs.—*Centralblatt für die gesammte Therapie*, March, 1889.

NEW COCAINES.

The endless activity of synthetical chemistry has lately been markedly demonstrated in connection with cocaine. It has been prepared artificially from benzoyl-ecganine by introducing the methyl group into it. Recently, EINHORN has announced and described three further substitution-compounds in which the place of methyl is taken by other groups; one of these is the lower homologue of true cocaine, while the others are metameric or higher homologues. Two of these could not be obtained in a crystalline form, but only in the form of oil. The third, however, and the salts of all three, are crystallizable.

So far, it has not been stated whether any of these new "cocaines" possess any special therapeutic properties. Judging from experience with other artificial drugs, it seems probable that they may in course of time be substituted for the true vegetable alkaloid, but that, until they can be prepared absolutely free from impurities, we shall be likely to hear further of untoward results from the use of cocaine. On the other hand, the importance of this discovery can scarcely be overestimated if it can be worked with sufficient precision to provide for an increased supply of cocaine of certain composition and good quality.

It remains to be seen whether the new cocaines possess similar therapeutic properties, and whether they can be prepared artificially more economically than the natural alkaloid, or will exist only as chemical curiosities.—*Lancet*, April 6, 1889.

PELLETIERINE.

BÉRENGER-FÉRAND, who has written a book which is authoritative, *On the Tenie of Man*, has published in the *Bulletin Générale de Thérapeutique*, February 15, 1889, an article in which he sums up the cases of tapeworm—in

all one hundred and ninety-one patients—at the Maritime Hospital of Toulon during the past year (1888), and the results of treatment.

It is still to pelletierine that Béranger-Férand gives the preference, this tænicide, which is the active principle of pomegranate bark, being by far the most successful of all remedies used. During the year 1888 pelletierine was employed one hundred and fifty-two times as a tænifuge at the Toulon Hospital. Of these cases one hundred and ten were successful, forty-two were unsuccessful, giving seventy-two per cent. of recoveries.

As for the manner of administration of the remedy: the patient takes nothing but bread and milk for supper the evening before; next morning five grains of the sulphates of pelletierine and isopelletierine are administered in solution with eight grains of tannin (or half a bottle of Tanret's solution of the mixed pelletierines, the other half to be given in an hour); from 7.30 A.M. to 8 A.M. a full dose of a tablespoonful of the German tincture of jalap is given, or from an ounce to an ounce and a half of castor oil. A few hours after the ingestion of the medicine the patient experiences a slight vertigo, and the tapeworm is voided, as a rule, four hours after the dose is taken. In order to avoid breaking of the worm during its passage and before the head is voided, it is advised that the patient shall sit at stool in a vessel nearly full of warm water.

Béranger-Férand has lately resorted to injections of a decoction of pomegranate bark to assist the expulsion of the worm, and claims that this is an improvement in the treatment.

It is needless to say that the above is now the favorite treatment of tænia in France, and Dujardin-Beaumetz affirms that "since we have established these rules of treatment, and wherever patients have scrupulously complied with them, we have had numerous successes, and in nine cases out of ten we obtain the worm with the head."

PHENACETIN AND THALLIN FOR CHILDREN.

The observations were made in PROFESSOR VON JAKSCH'S clinique in Graz on thirteen children, from one to thirteen years old. The diseases were pulmonary tuberculosis, pneumonia, acute and chronic pleurisy, and typhoid fever.

Phenacetin exhibited marked antipyretic action in doses of from one and one-half to six and one-half grains.

The temperature was lowered on the average 2.5° to 5.4° F. two hours after the administration of the drug. In obstinate coughing, especially if accompanied by fever, in headache, and in pleuritic pains, it gave relief. It had no quieting effect upon restlessness. The unpleasant accompaniments were cyanosis, sweating, and sometimes slight symptoms of collapse. With thallin a small dose was employed in the beginning, and was gradually increased when it was found to cause no dangerous symptoms. The limits were from one-half to five grains.

The average depression of the temperature after two hours was 1.9° to 6.3° F., not including the doses of one-half a grain.

Cyanosis, profuse perspiration, and sometimes chills, were more frequent after thallin than after phenacetin.—*Wiener klinische Wochenschrift*, Nos. 8 and 9, 1889.

AN ARROW POISON.

A letter from HENRY M. STANLEY, which was read at a recent meeting of the Royal Geographical Society, contained an interesting reference to the arrow poison employed by the natives of the Lower Congo district, and it afforded a curious insight into the strange perversions of knowledge by which the advances of civilization are retarded.

Stanley says they were much exercised as to what might be the poison on the heads of the arrows by which Lieutenant Stairs and several others were wounded, and from the effects of which four persons died almost directly. The mystery was solved by finding at Arisibba several packets of dried red ants. The bodies of these insects were dried, ground into powder, cooked in palm oil, and smeared on the points of arrows. It is well known that formic acid exists in the free state in red ants, as well as in stinging nettles, and in several species of caterpillars. This acid is, in the pure state, so corrosive that it produces blisters on the skin, and hence there is little ground for doubting that it was the "deadly irritant by which so many men had been lost with such terrible suffering."

The multitude of curious insects encountered, which rendered their lives "as miserable as they could well be," bears out Mr. Stanley's idea that many similar poisons could be prepared from insects. It certainly is strange that, with the exception of cantharides, and perhaps of *blatta orientalis*, the insect world is so little used for active therapeutics.—*Lancet*, April 13, 1889.

MEDICINE.

UNDER THE CHARGE OF

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SULPHONAL IN INSOMNIA.

MAIRET (*Bull. Méd.*, 1889, Nos. 25 and 26) reviews some of the results obtained with sulphonal, and details his own trials of the drug in cases of mental affection, and the effects with different doses of it. He sums up his remarks by saying: 1. That it is necessary to give sulphonal in large doses for only one or two days, since secondary effects from such doses are apt to appear by the third day. But the meaning of "full dose" differs, since the effect of 30-45 grains would be as great in some cases as that of 60-75 grains would be in another. This difference depends on two causes: the degree of

resistance of the subject, and the intensity of the agitating cause producing insomnia. When the degree of resistance is feeble, and the agitation slight, 45 or even 30 grains may be considered a full dose. When, on the contrary, the subject is vigorous and the agitation considerable, these amounts are small, and 60, 75, or even 90 grains must be administered. 2. Next it is necessary to diminish the dose. In all cases, no matter what the size of the initial dose was, the author lessened it to 15 grains. This amount was fixed upon because he found that the action of 30 grains, combined with that of the sulphonal already ingested, produced unpleasant secondary effects. 3. A dose of 15 grains can be taken with good hypnotic action for a varying number of days, but will finally lose its effect. 4. When the effects of sulphonal in this dose of 15 grains have ceased to appear, it is only necessary again to administer the large doses as at first, and sleep will come again.

TELLURIC ORIGIN OF TETANUS.

BOSSANO (*Rev. de Méd.*, February, 1889) reports the results of his experiments undertaken to determine under what conditions an earth contains the tetanic virus. A series of six earths, taken from dry places, and which had not for a long time been in contact with organic matter in a state of putrefaction, were used to inoculate a dozen rabbits. The results were entirely negative. On the other hand, ten specimens of earths taken from the meadows or cultivated fields, and each inoculated on two rabbits, gave positive results. Four of the twenty animals died of septicæmia; the others presented the following symptoms: On the the third day there appeared contracture of the member into which the injection had been made (always the right flank). This contracture progressively increased, keeping the limb forcibly extended, involved the homologous limb, and finally became general, and was accompanied by clonic convulsions which developed under the slightest external excitation. Usually the convulsions continued to grow worse and more frequent, then ceased suddenly, and were replaced by some coma ending in death from asphyxia. On the other hand, the convulsions sometimes remained less severe and less frequent, and death occurred suddenly in a spasm more severe than the others. Autopsies revealed nothing of importance.

Examination of the pus from the inoculation wound almost always revealed the slender, straight bacillus which is characteristic of tetanus. Numerous inoculations made with portions of the liver, spleen, marrow, brain, etc., and subcutaneous injections of urine and blood, have never given anything but negative results.

Another set of experiments with inoculations through a series of animals convinced him that the earth set up an inflammation in the connective tissues, in which the tetanus bacilli found a favorable nidus, that the amount of earth made no difference in the result, and that by inoculation from rabbit to rabbit an attenuation of the virus could be attained, and the animals ceased to be affected by the poison.

The practical conclusion from these experiments is, that the bacillus is widely diffused through the soil, and that when it comes in contact with open wounds in conditions of especial receptivity it can easily engender tetanus.

Thorough disinfection should, therefore, be at once carried out in the case even of insignificant wounds which it is supposed could have been contaminated by any such earth.

THE DURATION OF THE VITALITY OF TYPHOID BACILLI AND CHOLERA BACILLI IN FECAL MASSES.

UFFELMANN (*Centralbl. f. Bakteriöl.*, No. 15, 1889) says that the question how long pathogenic microörganisms can retain their vitality in decomposing masses, especially in excrement, is of both scientific and very practical importance. This is especially so with regard to the bacilli of typhoid fever and of cholera. Clinical experience goes to prove that at least the typhoid bacilli may continue to live in the feces for months and even for years. Numerous observations have been made to this effect, and some of these the author quotes, including one of his own, in which it appeared certain that the bacilli had remained alive and virulent for over a year. The cholera bacilli, on the other hand, would appear to live but a short time; at least there are no clinical experiences to the contrary. In order now to determine the truth of the matter, the author carried out some experiments in a manner which he describes at length, adding to feces, or a mixture of feces and urine, cholera or typhoid bacilli taken from pure cultures.

The result of the experiments with typhoid bacilli showed that they possessed in fecal masses an extraordinary power of resistance. In some cases they were still living at the end of four months. It appeared to make no difference whether the fecal masses were old or not, but the question of temperature was of importance. In the experiments carried on at a temperature of more than 62.5° F. the bacilli increased in number, while in those kept at less than 50° F. there was no such increase. The chemical reaction appears also to have some influence, and the presence of large amounts of carbonate of ammonium interferes with the growth of the bacilli. Whether or not the presence of urine is of importance does not yet seem clear.

The author's experiments with the bacilli of cholera showed that these would live but four days at most, and as a rule only a much shorter time, though they certainly live in feces at least twenty-four hours. A temperature of more than 61° F. appeared to favor them more than one of less than 48° F. Whether the presence of urine expedited their destruction did not seem certain.

THE MUSCULAR ATROPHY OF ATAXICS.

DEJERINE (*Rev. de Méd.*, Nos. 2, 3, 4, 1889) publishes a long article on this subject, based on nineteen cases of tabetic atrophy, in nine of which there had been an autopsy made, with a histological examination. He draws the following conclusions:

1. The muscular atrophy which frequently develops in the course of tabes (20.1 per cent. of his cases) is not an affection arising independently and adding itself to the symptoms of this disease, but is an integral part of its symptomatology.

2. This atrophy occurs generally at an advanced period of tabes, and is oftenest symmetrical. Its evolution is slow.

3. It commences nearly always in the muscles of the extremities (foot, hand), and a little oftener in the lower than in the upper limbs.

4. This predominance of the atrophy in the muscles of the extremities, whatever may be the degree of diffusion attained by it finally, is the rule, and the contrary the great exception.

5. In the lower limbs the atrophy exhibits itself in the form of talipes equinus, with plantar flexion of the toes, especially the great toe. In the upper limbs it takes the form of the Aran-Duchenne type, very rarely the scapulo-humeral or antibrachial type.

6. The type Aran-Duchenne depends solely on muscular atrophy. The deformity of the foot and toes depends, in its commencement, on the same pathogeny; but later there are aponeurotic and muscular contractions which hold the foot and toes in their faulty position.

7. Tabetic muscular atrophy develops without fibrillar contractions. The power of voluntary muscular contraction is diminished or abolished. The faradic and galvanic contractility is modified quantitatively, but the reaction of degeneration is not common.

8. This muscular atrophy depends on an alteration of the motor nerves, which diminishes progressively from the periphery to the centre, and a trace of which may, in some cases, extend even up to the anterior roots. The alteration is purely peripheral in nature, the motor cells and the gray matter of the anterior horns being intact.

9. The radiation from periphery to the centre (so common in other forms of peripheral neuritis) agrees perfectly with the symptomatology of tabetic muscular atrophy, as the author has described it in the course of this article.

10. The pathogeny of the peripheral neuritis on which the muscular atrophy of ataxics depends is still undetermined. We know that it is not the same as the neuritis of the sensory nerves met with in these patients. Less frequent in the course of *tubes* than the latter, the motor neuritis ought henceforth to be regarded as pertaining also to the malady of Duchenne, the symptoms of which it can singularly modify in certain cases.

THE ACTION OF OIL OF TURPENTINE IN IDIOPATHIC CROUP.

LEWENTANER (*Centralbl. f. klin. Med.*, No. 8, 1889) formerly reported his success with oil of turpentine in the treatment of croup, but there might possibly be a question raised about the correctness of his diagnosis, since no membrane was found expectorated. He now reports two other cases, both of them *in extremis* when the treatment was commenced, and both of which were saved, apparently by the use of turpentine.

The first case was a child of two years, who had exhibited signs of stenosis for several days, and who had reached about the seventh day of the disease. When first seen by the author the asphyxia was extreme, the cough entirely aphonic, the face pale and livid, and the pulse scarcely perceptible. No membrane had been expectorated. A teaspoonful of oil of turpentine was administered, and ice-compresses put around the throat. The child slept more quietly through the night, received another dose of turpentine on the next morning, and during the day expectorated a portion of membrane of

considerable size. Under continued administration of turpentine in smaller doses, improvement steadily progressed.

The second case was that of a child of four years, who had been attacked suddenly with symptoms of stenosis, and was in the eighth day of his illness when seen by the author. He then exhibited extreme dyspnœa, with pale skin, and filiform and scarcely perceptible pulse. There had been no membrane expectorated. A teaspoonful of oil of turpentine was given, and the continuous atomization of a mixture containing turpentine prescribed. Very soon after the ingestion of the drug there was a violent paroxysm of coughing, and a large piece of membrane three to four inches long was expectorated. As it, however, continued to form, the treatment was persisted in, a teaspoonful of the medicine being given twice a day. Membrane was coughed up in abundance, and in a few days the child was well. The author is fully convinced that turpentine has a specific action on the disease.

PLEGAPHONY.

At the close of a long article on "plegaphony, a new diagnostic method in case of the absence of bronchophony," SEHRWALD (*Münch. med. Wochenschrift*, 1889, S. 25) draws the following conclusions:

1. In many affections the testing of vocal resonance and bronchophony gives negative results, on account of the weakness of the voice. In such cases the voice can be entirely replaced, so far as concerns bronchophony, by the percussion of the larynx with pleximeter and hammer.

2. The percussion of the larynx is conducted to the chest-wall almost exclusively by the air in the bronchial tree, and only to a slight degree by the walls of the air-passages and by the soft parts of the body.

3. Over infiltrated pulmonary tissue the sound scarcely differs from its original character, and possesses three typical peculiarities—it is very loud, clear, and striking; it has a distinctly tympanitic resonance, and it feels to the ear as a short blow.

4. Over large portions of pulmonary tissue completely destitute of air, there is an extremely well-marked alteration of tone with open and with closed mouth. When the mouth is open the note is not only higher, but also much more tympanitic.

5. Over healthy lung tissue the note is duller, fainter, and especially is of a less distinct quality. It gives no palpation-impulse and has no tympany or alteration of tone. It has, however, an evident and characteristic clicking or jingling resonance.

6. Over an effusion the sound is weakened, or abolished if the percussion is light. If the lung is also without contained air, the sound is not only weakened, but clear and slightly tympanitic; while if air be still present, the weakened note has the characteristics detailed under section 5.

7. Over large cavities the sound is even louder, more striking, and more tympanitic than over infiltrated tissue, while the alteration of tone is more evident, and the palpatory sensation of a blow more pronounced.

8. In pneumo-thorax the sound has a well-marked metallic resonance.

9. The intensity of the sound is greater in the healthy lung on the side of the chest opposite to the side of the larynx which was percussed. It is also greater on deep inspiration, and when the mouth is closed.

10. Owing to the convenient situation of the part percussed, the patient can, when necessary, perform percussion himself.

ACUTE LOBAR PNEUMONIA IN CHILDREN.

C. W. TOWNSEND (*Arch. of Pediat.*, March and April, 1889) publishes a very interesting article on acute lobar pneumonia occurring in children, based on his experience in forty-two cases in patients under ten years of age, and on a comparison of this with the literature of the subject. His remarks may be summarized as follows: Acute lobar pneumonia is carefully to be distinguished from lobular or broncho-pneumonia, from which it differs widely in etiology, course, and prognosis. Though often unrecognized, it is of frequent occurrence, even in the youngest children. The cardinal symptoms found in the adult, *viz.*, pain in the side, cough with bloody expectoration, and continued high temperature may all be obscured or lacking, with the exception of high temperature, which usually ends by crisis. The onset is sudden with vomiting and occasionally a convulsion, but very rarely a rigor. Pain, if it can be localized, is frequently seated in the abdomen or is diffuse on the affected side. Cough is sometimes absent during the first two or three days, and expectoration is seldom seen in children under eight years of age. Cerebral symptoms are often marked. Dilatation of the nostril and moaning on expiration are frequently present, but also occur in other diseases. Physical signs are often very tardy in revealing themselves. The prognosis is very favorable except in the newborn, unless the child be debilitated from some other reason. Active or debilitating treatment should be avoided, as the natural tendency of the disease is to recovery.

PNEUMONIC PARALYSIS.

STEPHAN (*Rev. de Méd.*, January, 1889) reports two cases of paralysis occurring in the course of pneumonia, gives the details of many others collected from the literature of the subject, and discusses the opinions of various writers. He concludes by saying that paralyzes may develop at the beginning of pneumonia, in its course, or during convalescence. The cause of these paralyzes is in some cases a meningitis (cerebral, spinal, or cerebro-spinal), but in many others there is an entire absence of gross organic lesion. In cases of the first category it is admitted that there is an extra-pulmonary localization of pneumococci in the meninges; and in those of the second category it seems most probable to the author that the pneumonic affection has determined either directly, or indirectly by the medium of the cerebro-spinal vessels, disturbances of a dyscrasic, dynamic, or functional nature in the nervous centres or in the nerves.

PULMONARY VENTILATION AND AMPLIFICATION OF THE THORAX UNDER THE INFLUENCE OF GASEOUS INJECTIONS.

BERGEON (*Lyon Méd.*, No. 13, 1889) has again brought forward his "method" under a different theory and for a different purpose. On the ground that carbonic dioxide inserted into the rectum is rapidly absorbed and eliminated by the lungs, and thus *increases the pulmonary ventilation*, he

advises this treatment for pulmonary phthisis, reports several cases, and draws conclusions which may be summarized as follows:

1. Gaseous injections furnish a rapid means of increasing the perimeter of a thorax of insufficient size, and this increases the capacity of resistance to the catarrhal affections of the respiratory passages so frequent in those predisposed to pulmonary phthisis.

2. They aid in producing the disappearance of the tubercle bacilli by increasing the vital resistance and the pulmonary ventilation, and by modifying the nidus in a way antagonistic to the development of the microbes.

3. They exert a favorable action even in febrile phthisis; but in order that this action may be salutary and not harmful, it is necessary to comply strictly with the condition that the gas be obtained from a natural mineral water. If an artificial gas is to be associated with this, it is necessary that it be prepared in a condition of absolute purity.

CARDIAC FAILURE AND SUDDEN DEATH.

JOHN A. MCWILLIAM (*British Medical Journal*, Jan. 5, 1889), in writing of this subject, says that although the term is in general rather loosely used, there are still a large number of cases to which the expression "cardiac failure" correctly applies. The organic lesions most commonly associated with it are degenerative changes in the muscular walls, aortic disease, and disease of the coronary arteries, but it has been observed in cases where no gross structural lesions could be detected.

Sudden stoppage of the heart is usually assumed to "take the form of quiescent stand-still in a state of diastole," but a long series of experiments which the author has carried out on the mammalian heart has convinced him that such a mode of failure is very exceptional, if we exclude the action of such causes as chloroform narcosis, asphyxia, and hemorrhage. There are usually seen in heart failure in animals, violent, irregular, incoördinated manifestations of ventricular energy. The normal beat is at once abolished, and the ventricles exhibit a rapid, quivering, twitching action, and become distended with blood. The muscular action is arrhythmic, some of the muscular bundles being contracted while others are relaxed; and, consequently, blood can scarcely be expelled from the ventricles, which are in a state of diastole. In the course of his experiments, the author was repeatedly impressed with the ease with which this condition, one of whose titles is "delirium cordis," is produced. Indeed, it will frequently develop of its own accord, after the animal's thorax has been opened. The conditions and circumstances associated with this heightened ventricular susceptibility are always abnormal ones, involving a disturbance of the normal nutrition of the heart. They are such as would be present in the course of prolonged experiments, when the natural circulation has been in some degree modified.

The author believes that the fibrillar mode of contraction (delirium) is the mode of cardiac failure and the direct cause of death in many cases of sudden dissolution in man. This is especially likely, since it has been observed that the higher the mammal, which is the subject of experiment, stands in the scale, the more easily is this condition brought about, and the more persistent and fatal is it. Indeed, without this explanation, it is impossible to

account for the many cases of cardiac failure occurring in those apparently well, and in whom it is impossible that any sudden increase of weakening or degeneration of the cardiac fibre could have taken place. The author quotes from several writers, showing that they do not consider the usual explanations offered sufficient to account for many cases. It is probable that many instances of non-fatal syncope are due simply to a cardiac insufficiency dependent on a temporary change in the rhythm and force of the cardiac movements, while in fatal syncope there exists instead, or super-added to it, the condition of fibrillar contraction. There exists no doubt an altered nutrition of the cardiac muscle, which may or may not show visible sign to histological examination. There is no ground for supposing that angina pectoris is caused by fibrillar contraction, though death occurring in the paroxysm may be due to the heart's passing into delirium. In conclusion, the author admits the possibility of sudden syncope from plugging of the coronary arteries, inhibitory influences, mechanical over-distention, or from pressure of the heart, but claims that it is probable that in many of these cases the fatal issue is determined by the occurrence of fibrillar contraction in the ventricles: while in other instances fatal delirium cordis may develop without any of these exciting causes.

THE PHYSICAL EXAMINATION OF THE STOMACH AND INTESTINES.

OBRASTZOW (*Deutsch. Arch. f. klin. Med.*, B. 43, H. 4 and 5, 417) devotes a long article to the consideration of this subject, quoting the opinions of others, and detailing his own careful observations and numerous measurements. His method of examination is as follows: The patient is placed upon his back with the knees drawn up, and the elbows placed against the sides. The epigastric region is then lightly struck in order to determine the absence of any acoustic signs. The patient is then raised into a sitting posture and given one or two glasses of milk or water. Having been again placed in the recumbent position, the abdomen is percussed by striking it with the four finger-tips of the right hand. The limits of the stomach, especially the lower boundary, are determined by noticing the point at which the splashing sound is no longer heard.

The position of the lower border of the stomach is the most important one, and the author devotes most of his attention to its consideration. He sums up the results of his observations on it as follows:

1. The lower border of the stomach, both in men and women, is usually to be found in the lower supra-umbilical third—*i. e.*, the lower third of the xipho-umbilical line.
2. In men of the middle class the border lies somewhat higher than in women of the same class.
3. In working women, apart from the influence of the disease causing displacement, it lies somewhat higher than in women in affluent circumstances.
4. The influence of age is seen in the fact that in children under fifteen years the lower boundary of the stomach seldom reaches to the navel; while over the age of fifty it oftener reaches below the navel than above it. Between fifteen and fifty years the influence of age is inconsiderable.
5. Previous pregnancies produce a depression of the lower gastric border.

6. The influence of diseases is as follows: All those in which there is depression of the diaphragm, as pleurisy, emphysema, pneumo-thorax, displace the lower border downward. So also do enlargements of the liver and spleen. The converse is true of those processes in the abdominal or pelvic cavity which press the diaphragm upward—*e. g.*, pregnancy, distended bladder, tumors below the stomach, peritonitis, perimetritis, perityphlitis, intestinal obstruction, typhoid fever, etc. Diseases of the stomach, with the exception of gastrectasia, and diseases of the intestine not causing tympanites have no special influence on the position of the stomach.

7. The most marked influence on the position of the lower gastric boundary is exerted by the shape of the body and the general nutrition. Thus in men with excellent skeletal development and nutrition it lies in the middle supra-umbilical third; in men with average development it reaches the junction of the middle and lower thirds, or extends into the upper part of the lower third; and in those slightly built and with poor general nutrition it usually reaches into the lower part of the lower supra-umbilical third and to the level of the navel. The same conditions hold good for women, except that in those not of the working class and of average development the lower gastric border reaches, not into the upper part of the lower third, but into its lower part; and when the women are poorly developed, it lies usually at the navel.

THE PATHOLOGY AND MEDICINAL THERAPY OF ILEUS.

NOTHNAGEL (*Wien. med. Presse*, 1889, 443) condemns the administration in ileus of purgatives, given with the idea of increasing peristalsis and overcoming the obstruction. He has made a large number of experiments on rabbits, opening the abdomen under water, and ligating the intestine. He has found that the conditions there obtaining are different, according to whether the portion of the bowel which has been tied is in motion or at rest. If the latter, nothing out of the way is observed. Any gastric contents which may chance to be present are propelled onward; but except for this the bowel, both below and above the constriction, remains quiet. If, on the other hand, the intestine was in motion when tied there developed a very active peristalsis on each side of the ligature. The effect above the stenosis is to produce an excessive dilatation of the bowel. At times there will be a spasmodic contraction of the intestine, and the contents are forced backward toward the pylorus, to return again after the spasm has ceased, and to be again forced backward when the spasm is repeated.

Active peristalsis produces a dilatation and paralysis of the intestine, and the lesson, therefore, is not to increase peristalsis in ileus any more than in strangulated hernia or volvulus. Purgatives are to be strictly avoided. Only when the symptoms are brought about by simple fecal impaction may drugs be used to soften the mass; and the diagnosis of this condition cannot be made with certainty at the beginning. On the other hand, peristalsis may with advantage be increased from below. To accomplish this the author especially recommends the injection of iced carbonic acid water, which has the three advantages of a large amount of fluid, coldness, and distention by gas. Caution must, however, be used where the obstruction has already lasted some time, lest perforation be produced by the gas. In some cases no

means succeeds so well as the injection of a ten per cent. salt solution. An exceedingly important drug in the treatment of ileus is opium. Indeed, the author claims that opium can be used in every case of acute and sudden pain in the abdomen, when no certain diagnosis can be made. If vomiting be present, morphia should be given subcutaneously. Another important factor in the treatment of ileus is total abstinence from nourishment. He has had no success with the method of washing out the stomach, massage, or electricity.

WEIL'S DISEASE.

W. BRODOWSKI and T. DUNIN (*Deutsch. Archiv für klin. Med.*, Bd. 43, H. 4 u. 5) say that, although there have already been a number of cases of this affection described, its cause and nature are not well understood. The present case, therefore, deserves especial attention, since it is accompanied by the report of the autopsy. The patient, a strongly built and well nourished man of thirty-six years, had been attacked about ten days before with severe headache, and had since suffered from repeated chills, with great pain in the abdomen, constipation, and some sweating. When examined, he exhibited some jaundice and swelling of the feet, a few râles in the lungs, especially on the left side, and a temperature of 100.4° F. and pulse of 96. The liver and spleen were decidedly enlarged, the lymphatic glands of the neck, axilla, elbow, and groin were enlarged and tender, and the sternum and long bones also somewhat painful on pressure. The urine contained bile and a small amount of albumin, with numerous hyaline tube-casts. The blood contained a somewhat increased number of leucocytes, but was in other respects normal. After being under observation five days the patient died in collapse, having in the meantime suffered from increasing and very intense pain in the region of the liver, more marked œdema and jaundice, and a greater number of râles in the lungs.

The diagnosis had to be made from enteric fever, acute yellow atrophy, continued malarial fever, and leucæmia. The first was excluded by the absence of roseola and intestinal symptoms, and the presence of enlarged liver and lymphatic glands, and of tenderness over the liver. The second was excluded by the slight degree of icterus and the enlargement of the liver; and the third by the symptoms connected with the liver, kidneys, and lymphatic glands. At first the disease was thought possibly to be a case of subacute leucæmia, but this also was excluded by the state of the blood, and the presence of jaundice and albuminuria. The authors accordingly were of the belief that they had to do with a case of Weil's disease; and described it accordingly as *hepatitis parenchymatosa acuta, nephritis acuta, tumor lienalis acutus, adenitis generalis acuta*.

The principal results of the post-mortem examination were as follows: The lungs were very hyperæmic and œdematous; and in the lower portions there were many thickened portions which felt like spleen, could be easily crushed, and, on section, were of a deep red color. The liver was enlarged and paler than normal. On its surface and section there were numerous irregular spots, the color of yellow clay, which followed the branches of the portal vein. The liver acini were well marked. The spleen was enlarged at least five-fold, dark

red, and of almost fluid consistence. The kidneys were twice their natural size, the surface smooth, gray-red, and covered with small white spots. The cortex was twice the natural thickness, and similar white spots were visible. The medullary portion was redder than the cortical, and white spots were visible at the bases of the pyramids. The thoracic and abdominal glands were enlarged, soft, and reddish-gray. The microscopical changes are described in full; the principal ones being as follows: In the thickened portions of the lungs there was an extravasation of blood in the vesicles, and foci of small-celled infiltration in the interstitial connective tissue, especially along the course of the larger veins. The yellow spots in the liver consisted of a similar cellular infiltration, which was much more abundant in the interacinous portion of the connective tissue than in the intra-acinous tissue. The liver cells were in some parts atrophic and compressed, in others swollen. They were cloudy, and many of them were tinged with bile. In the kidneys the condition was quite similar; the spots alluded to consisting of cellular infiltration of the interstitial connective tissue, especially in the cortical portion. The epithelial cells were swollen and cloudy. In the spleen there were small hemorrhagic extravasations, and the small-celled infiltration was seen between bundles of connective tissue. The result of a bacteriological examination was practically negative.

SURGERY.

UNDER THE CHARGE OF

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A PLASTIC OPERATION FOR RESTORING THE FREE BORDER OF THE LOWER LIP AFTER THE REMOVAL OF EPITHELIOMATA.

M. IMBERT reports (*La Revue de Chirurgie*, April 10, 1889) in detail the method of Professor Tripiér for refashioning a lower lip by means of a mucous strip taken from the membrane of the lip, left attached by its two extremities and slipped into place so as to restore the normal appearance and thickness of the lip. The operative procedure is described as very simple. Antisepsis is aimed at, or, at least, scrupulous cleanliness of the mouth, gums, teeth, and all surrounding parts. The tumor having been removed, the lip is everted, the mucous strip freed by means of a bistoury or tenotome, and slid forward into place, hemorrhage having first been arrested by torsion and any projecting labial glands removed by scissors. The strip is fixed in its new place by points of suture. A tampon of iodoform gauze is placed in the groove between the lip and gums.

Since 1883 this procedure has been adopted in 46 cases. The first two were unsuccessful on account of partial mortification of the strips; two others failed on account of a return of the disease. The other 42 were successful.

PRECANCEROUS CONDITIONS OF THE TONGUE.

MR. BUTLIN, in his paper on this subject (*British Medical Journal*, April 6, 1889), deals chiefly with three points: 1. The proportion of cases of cancer of the tongue in which the disease was preceded by a well-recognized cancerous condition. 2. The relative importance of various precancerous conditions. 3. The question of the early and free removal of some precancerous conditions. In a certain number of cases which had been under the care of the author, cancer of the tongue had been preceded by a precancerous condition in at least 70 per cent. Warty growths appeared to be the most dangerous of the conditions which actually and immediately preceded cancer, and these warty growths were shown to be more frequent than was generally believed. The question was raised whether it would not be right in cases of leucoma and chronic superficial glossitis, in which warts and warty growths form on the surface of the tongue, to remove the whole of the diseased area of the tongue, or certainly the forepart of the organ, instead of merely removing the warty growth and an area of the surrounding tissue. Two cases were related in which simple warty growths formed on leucomatous tongues and were removed, and in which, at a later period, cancer developed, but not in the seat of the removal of the warts. The use of liquor arsenicalis internally was recommended in all cases of chronic affection of the surface of the tongue in which the disease is associated with various forms of chronic affection of the general integument (non-specific). Several cases were related to show the advantage of the removal of early cancerous affections of the tongue.

CLOSURE OF THE JAWS SUCCESSFULLY TREATED BY EXCISION OF
A CONDYLE.

MR. FREDERICK PAGE reports (*British Medical Journal*, March 23, 1889) the case of a fair-complexioned, delicate-looking girl, aged nine years, who was admitted under his care with fixation of the mouth from bony ankylosis of the right temporo-maxillary articulation.

When two years old she suffered from measles, followed by profuse and long-continued discharge from the right ear. Six months after, a gradual closing of the mouth was noticed. For six years there had been little or no motion of the jaw. Two years ago an attempt was made to force the mouth open, but it was not successful.

It had been proposed, and was under the consideration of the child's parents, to cut away the incisor teeth level with the gums to facilitate the introduction of food into the mouth. Mr. Page, however, proceeded to operate as follows: The lower jaw was exposed on the right side by a single semilunar incision, rather more than an inch in length, a little below and parallel to the zygoma. The lower jaw was firmly welded to the skull. With a chisel and mallet a section of the bone was made, running obliquely downward and backward from the centre of the sigmoid notch. Then the connection with the skull was by the same means severed, and the portion of the bone thus separated. The mouth could then be opened.

Very little bleeding accompanied the operation. For a few days the right

eye could not be quite closed. The wound healed rapidly, and the child suffered very little inconvenience from the operation.

A NEW METHOD OF OPERATION UPON NASO-PHARYNGEAL TUMORS.

PROF. ANNANDALE describes (*The Edinburgh Medical Journal*, March, 1889), as follows, the steps of his procedure in those formidable cases of naso-pharyngeal tumors too large for removal by splitting or hooking forward the soft palate. 1. The exposure of the anterior nares by freely dividing the mucous membrane connecting the upper lip and upper jaw, according to the plan of Rongé. 2. The division of the bony septum of the nose along its attachment to the jaw. 3. Incising the soft parts along the middle line of the hard palate, and then sawing through the alveolar margin of the upper jaw and through the entire hard palate along the same line. The soft palate may or may not require division in its middle line. 4. The forcible separation of the two jaws, and the introduction through the gap of the finger, of the periosteal scraper, or other similar instrument, with a view of separating the secondary connections of the growth to surrounding parts. 5. The removal of the growth from its primary site of origin by forceps, sharp spoon, cold snare, or galvanic wire. After the operation the two jaws are brought together, and retained by one or more sutures. Prof. Annandale believed that his operation had for the first time demonstrated the fact, that the upper jaws, after such a section, could be separated to such an extent as to give access to the base of the skull and posterior nares. Three cases recently operated upon with success were then reported in detail.

DIAGNOSIS AND TREATMENT OF CANCER OF THE BREAST.

DR. J. COLLINS WARREN (*Boston Med. and Surg. Journal*, April 11, 1889) thinks it is generally agreed at present to remove the whole gland and a more liberal supply of integument than formerly. Sometimes vertical incisions are preferred to the customary horizontal cuts, as affording better drainage. But the most important feature of this part of the new operation is the careful dissection of the fascia from the pectoral muscle, for it is in this tissue that capillary lymphatics are concealed, which form hiding-places for the outposts of the disease. Careful attention should also be paid to the margin of the pectoral muscle; not only should the fascia which covers in the axilla be dissected off from it, but its lower border should be well freed from fat and connective tissue. The axilla is best opened by a cut through the skin along the edge of the pectoralis, until we come to the edge of the coraco-brachialis. Continuing down on this muscle a short distance with the knife, the skin and superficial fat drop away sufficiently to disclose the great vessels lying beneath a thin fascia. Opening this fascia backward along the line we have come exposes the contents of the axilla, and especially the branches of the vessels, which can now be secured as the operation progresses. A pyramidal mass of fat is now dissected out, the apex reaching sometimes to the clavicle, the base frequently extending deeply on to the subscapular group of muscles. The glands which lie near the clavicle will have to be removed separately, and can best be enucleated from the neighborhood of the vessels by the finger. If they are numerous, the pectoralis can be separated on the line selected for

the ligature of the axillary artery below the clavicle, and the glands and some of the loose tissue can then be readily removed.

COLECTOMY FOR MALIGNANT DISEASE.

MR. KENDAL FRANKS reported (*British Medical Journal*, March 2, 1889) two cases of cylindrical epithelioma of the colon in which operative measures were employed to remove the tumors. In the first case the colon and sigmoid flexure with the growth and part of the abdominal wall were excised, the upper end of the gut was brought out at the angle of the wound in the loin, and an artificial anus made. The abdominal wound was closed with sutures. The patient died on the sixth day from exhaustion. In the second case the tumor was found to be an epithelioma surrounding the transverse colon near the hepatic flexure. The tumor and intestine on each side were excised, and the divided ends sutured and returned to the abdomen. On the sixth day there was a very copious motion *per anum*, and the bowels acted regularly afterward. Four months later the patient was in good health and much increased in weight.

From a consideration of the cases collected by the author, which numbered fifty-one, it appeared that the operation had proved fatal in 40.8 per cent. In twenty of those that survived operation, the disease returned in ten, and in the remainder the period which had elapsed was too short to draw conclusions from. One case was alive four years after the operation. The author drew the following conclusions: (1) Colectomy rarely effected a cure; (2) as a palliative measure it was justifiable, and frequently demanded; (3) recurrence usually took place in the liver or mesenteric glands, and death was then much easier than when the intestine was occluded; (4) that the mortality after immediate suture of the intestine and after the formation of an artificial anus were nearly equal; (5) that immediate suture of the divided ends was preferable to the formation of an artificial anus; (6) that the death-rate had been reduced in the later cases, and a further reduction might be anticipated.

In the discussion which followed Mr. Bryant said that as between colectomy, colotomy, and inaction he would prefer colotomy. Mr. Treves remarked that Mr. Franks's collection of cases of colectomy was the death-warrant of the operation. Mr. Pitts thought that it was difficult to get the patients at a sufficiently early stage of the disease to justify the operation.

WOUNDS OF THE KIDNEYS.

Antiseptic surgery and the rich statistics of the American Rebellion and the Franco-German war justify, according to GRAWITZ (*Archiv für klinisch. Chirurg.*, Bd. 38, Heft 2), a new revision of kidney wounds.

The author first considers injuries to the kidneys not accompanied by wound of the abdominal walls. From his own experience he concludes that slight rupture or laceration of this organ from force applied in the kidney region is far more frequent than is generally supposed; the usually favorable course of these cases not presenting points of sufficient interest to suggest that they be reported.

Whatever the force, or however it be applied, the pathological condition

induced by it is usually a tearing or splitting of the kidney in a line or lines radiating from the hilum, and dividing the kidney more or less completely into an upper and a lower portion. Of course, this implies a considerable bruising of the parenchyma with infiltration of blood or urine. Diffuse hemorrhage into the parenchyma, even without true bruising, is observable in every traumatic lesion of the kidney.

The bleeding is only alarming when either the renal artery or its second or third bifurcations are torn. The large size of these vessels and the high blood-pressure, give little hope of spontaneous thrombosis, though cases are recorded in which this has occurred.

If the pelvis is ruptured, the urine readily infiltrates the contused cellular tissue. If the fatty capsule of the kidney is not ruptured, it becomes distended by the blood and serves to stop the hemorrhage by mechanical pressure. If the capsule is ruptured, the blood extravasates into the retro-peritoneal cellular tissue and forms a hæmatoma extending from the diaphragm to the pelvis. A tear in the ureter would, of course, prevent the blood from passing into the bladder. In case the peritoneum covering the kidney is opened, the blood passes directly into the peritoneal cavity. This is always a serious complication, and one particularly prone to occur in children.

The symptoms of contused or lacerated kidney are, shock, of severity and duration proportionate to the amount of injury, great pain in the region of the kidney, exquisite tenderness on pressure, hæmaturia; and, in case of extensive bleeding, the detection of the effused blood by palpation and percussion together with the signs of internal hemorrhage.

Even in the slight cases unattended by other characteristic symptoms, the hæmaturia is constant. There may be the smallest mixture of blood with the urine, or pure blood may be passed per urethram in large quantities. The blood may temporarily disappear from the urine, owing to the plugging of the ureter by a thrombus. This will be denoted by renal colic. The hæmaturia usually lasts for one or two weeks.

Of 108 cases of injury to the kidney without external wound, 58 recovered. Of these 58 recoveries, there was probably primary union of the laceration in 46, since all symptoms disappeared in a few weeks. In cases of great laceration and extensive bleeding, the cure occupied many months.

In 17 of these 108 cases, there was suppuration following the injury; 10 of these suppurative cases recovered. The microorganisms of suppuration may penetrate to the contused tissue infiltrated with blood and urine, either through the blood itself, by the way of the urinary tract, or, possibly, from the intestinal contents. The abscesses thus formed may either rupture spontaneously or be opened, after which healing may take place, or they may refuse to close, ultimately exhausting the patient by long-continued suppuration.

Of the fifty cases terminating fatally, 18 were complicated by wounds of other internal organs, leaving 32 cases in which the fatal issue could be directly traced to the kidney wounds. This gives us, for contusions and lacerations of the kidney unaccompanied by external wound, a mortality of 35.5 per cent. Fourteen of the fatal cases perished from primary hemorrhage; death coming on in from fifteen to twenty hours. On section, a large amount of effused blood was found, together with the gaping lumen of a

large branch of the renal artery. Eight cases perished from either a very slow continuous hemorrhage, or secondary hemorrhage. In seven cases, the fatal issue was due to suppuration either of the kidney itself, or of the perirenal cellular tissue. In three cases, death was due to suppression of urine.

Considering, next, open wounds of the kidney, of 50 carefully recorded cases, 15 are complicated by wounds of other internal organs. Of the remaining 35 uncomplicated open wounds of the kidney, 11 terminated fatally; giving a mortality of 31.5 per cent.

The symptoms of open wounds do not differ from those previously described as characteristic of lacerations, except that urine may escape externally. Suppuration can only be prevented by most rigid antisepsis, and the time occupied in convalescence is always several weeks. Of the 11 fatal cases, 2 perished from hemorrhage, 8 from suppuration and its attending complications.

It is of interest to observe, therefore, that in open, uncomplicated kidney wounds, the danger lies almost entirely in suppuration. This is to be treated by the antiseptic method, even extirpating the kidney if it is found riddled with abscess. Evacuation of pus per the urinary tract is fraught with danger to the other kidney.

Finally, in all cases of kidney wound the use of the catheter is not to be commended, since it is a fertile source of infection, and is rarely of much service.

NEPHRORRAPHY.

M. TERRILLON reports (*Annales des Maladies des Organes Génito-urinaires*, April, 1889) the case of a woman, forty-two years of age, who, after many pregnancies, had developed, five years previously, acute pains in the left side of the abdomen. Soon after a movable tumor appeared in that region, extending to the umbilicus. It was diagnosticated as a hypertrophied kidney. It was extremely tender. At the time of operation the patient had not left her bed for six months. Lumbar nephrorraphy was performed, and thirty-eight days later the patient was much relieved and the volume of the tumor greatly diminished.

M. Terrillon thought that the mobility and tenderness of the organ indicated nephrorraphy in spite of its augmentation in volume. It might have been asked, 1st, if in spite of its mobility the congested organ could easily be brought to the level of the lumbar wound and fixed there; 2d, if the congestion or the swelling would be relieved by immobilization. This latter result seemed probable, as the mobility appeared to be certainly the cause of the congestion, though the writer had not found this interesting point treated with sufficient fulness in published cases. He employed sutures extending not merely through the fatty capsule of the kidney, but also through the capsule proper and even into the parenchyma of the organ. Six sutures of this character give greater solidity and thickness to the adhesions to the posterior abdominal wall, and this has also been shown by experiments upon animals.

M. GUYON reported two cases. He believes that while operative measures are rarely necessary in the treatment of troubles occasioned by displaced kidney, that yet they may be clearly indicated by the intolerable pains which

sometimes accompany them. In his two cases some months had elapsed and the pains had entirely disappeared.

Nephrorraphy was chosen not only on account of the value of preserving a healthy organ, but because recent statistics had shown the comparative safety of secondary nephrectomies. Removal of the kidney should be an operation of necessity; its fixation is an operation of choice; but even the latter should only be undertaken when medical treatment has failed and apparatus has proved useless.

M. Guyon employs sutures passed through the parenchyma of the organ, and has never observed any resulting change in the condition of the urine. He does not consider it necessary to freshen the kidney, but denudes the surface to which it is attached.

INGUINAL VS. LUMBAR COLOTOMY.

MR. HARRISON CRIPPS (*Medical Press and Circular*, April 10, 1889), comparing these operations, concludes that there are certain grave objections to the lumbar operation, amongst which are the depth of the bowel in a fat subject, and the very limited space in which the surgeon has to work between the crest of the ilium and the last rib, which makes it difficult to find the bowel without severe damage to the surrounding tissues. Then, again, there is often a difficulty in recognizing the colon, so that numerous mistakes have been made in opening the small intestine, and even the stomach. But perhaps the gravest objection of all is that it not infrequently occurs that the course of the colon is so abnormal as to make it quite impossible to find it by the lumbar wound, the attempted operation ending in a fiasco. On the other hand, the inguinal operation meets all these objections. There is plenty of space, the bowel can be absolutely identified, there is no tension on the stitches, and little difficulty in finding an abnormal colon. Moreover, the inguinal method has one great advantage entirely its own, by enabling the abdomen to be explored and the site of the obstruction to be verified before opening the bowel, so that the mistake of being below the lesion could not occur. This was illustrated by two cases. The objections raised to the inguinal operation are, subsequent prolapse of the bowel, and that it is not suitable for urgent cases. In the author's experience prolapse was not more frequent from the one opening than from the other, and by a little care in the inguinal operation it could to a great extent be avoided. As to urgent cases he had no hesitation in opening the bowel immediately, as was done in two instances narrated with perfectly successful results.

ON INFLAMMATORY DISEASE OF THE SEMINAL VESICLES.

MR. JORDAN LLOYD reports (*British Medical Journal*, April 20, 1889) several cases of disease of the seminal vesicles, as to which he makes the following remarks:

Seminal vesiculitis is usually secondary to mischief in the urethra. It is a common accompaniment of gonorrhœal epididymitis, and originates in a precisely similar manner. When the inflammatory process has crept from the urethra along the common ejaculatory duct to its termination, it is as likely to proceed along the short seminal tube to the vesicle, as along the twenty-

four inch vas deferens to the epididymis. It commonly extends along both these structures. Mr. Lloyd has seen the vesicles inflame secondary to urethritis, set up by the passage of a bougie, by the presence of a stricture, and after coitus with a leucorrhœal woman. He has seen both vesicles suppurate in one case where their inflammation appeared to be primary; at least there was no antecedent cause discoverable in the urethra. When acute inflammation attacks a vesicle it gives rise to a swelling at the base of the bladder, the greater part of which is due to effusions of inflammatory products into the perivesicular connective tissue rather than into the cavity of the vesicle itself, just as in epididymitis the bulk of the enlargement depends upon inflammatory infiltration into the connective tissue between the tubules of the epididymis.

Seminal vesiculitis, like acute epididymitis, most frequently terminates in resolution. It sometimes ends, however, in suppuration, and, when this occurs, pus may make its way laterally into the ischio-rectal fossa, or may diffuse itself deeply around the rectum (constituting one of the varieties of perirectal suppuration), or may discharge itself by the ejaculatory duct, or may open either into the bladder or rectum, but never into both cavities together.

The symptoms of vesicular disease are essentially those of vesical irritability—increased frequency of micturition, attended by more or less pain. They are like those of prostatitis, according to Professor Humphry, and consist in uneasiness about the perineum, painful defecation, frequent and rather painful micturition, or retention, painful emissions at night, bloody semen, persistent gleet discharge, and irritability of the bladder and sexual organs.

Zeissl says that the subjective symptoms differ but little from those of prostatitis; but there is one symptom which belongs exclusively to this disorder, namely, erections are well-nigh constant, and so painful as to constitute priapism. According to Lallemand, Gosselin, and Pitha involuntary seminal emissions occur.

Objective symptoms are much more reliable, and are easily elicited by careful methodical examination. A finger in the rectum recognizes an elongated swelling beyond the prostate, running obliquely upward and outward at the side of the base of the bladder. This swelling is made quite evident to the examining finger when a metal bougie is passed into the bladder and moved from side to side across the tumor. Mr. Lloyd has demonstrated a distended vesicle in this way, and has verified the diagnosis by aspirating seminal fluid through the rectum.

The conclusions he is led to by his present experience are as follows:

1. That inflammatory disorders of the seminal vesicles and their ducts are not uncommon.
2. That they are, in many respects, analogous to inflammatory diseases of the Fallopian tubes in women.
3. That while occurring sometimes primarily, they are, as a rule, secondary to inflammation of the urethra.
4. That the ejaculatory ducts may become obstructed, and the seminal vesicles consequently hyper-distended.
5. That termination by suppuration is exceptional.

6. That when suppuration occurs it should be dealt with by incision from the perineum rather than from the rectum.

7. That gonorrhœa is by far their most common originator.

8. That they are frequently concomitant with gonorrhœal epididymitis.

9. That they are usually diagnosed as inflammation of the prostate or neck of the bladder.

10. That while certain subjective phenomena are suggestive of these disorders, their diagnosis can only be made by objective examination from the rectum and bladder.

LINEAR ELECTROLYSIS IN URETHRAL STRICTURE.

M. LAVAUX reports (*Annales des Maladies des Organes Génito-Urinaires*, April, 1889), at a recent séance of the Academy of Medicine, that the results observed and collected by him in the cases of urethral stricture treated by electrolysis showed that, after the lapse of time, the cures were no more permanent than after divulsion or internal urethrotomy. Among a number of patients operated on seven or eight years ago by Mallez and Jardin the stricture had returned in every case. He concludes that no permanent cure has been discovered, and that rapid dilatation with careful attention to asepsis of the bladder and canal is the preferable method of treatment.

ULCERATION OF THE INNOMINATE ARTERY FROM PRESSURE BY A TRACHEAL TUBE.

MR. ERNEST MAYLARD reports (*Annals of Surgery*, March, 1889) the case of a child, eight years of age, in whom tracheotomy was performed for impending asphyxia caused by the pressure of a cervico-dorsal spinal abscess. The ordinary tracheal opening failed to give relief, and resuscitation was only effected by passing an instrument into the trachea, and hooking it well forward toward the sternum. When this was done air entered the lungs freely, and all symptoms of suffocation immediately disappeared. Removal of the instrument or any relaxation of the forward pull on the trachea at once caused the reappearance of all the obstructive symptoms. The insertion of an ordinary tracheal tube proved useless as the obstruction was below the part to which the tube reached. An ordinary gum catheter passed for about two and a quarter inches down the trachea proved temporarily efficient, and three days later was replaced by a specially made vulcanite tube, the length of the vertical part of which was two and one-quarter inches, and the bore equal to that of a No. 13 catheter. The child did well for four or five months, although it was impossible permanently to remove the tube. At the end of that time it died suddenly from a tremendous hemorrhage, which was found to be due to an opening into the innominate artery. At the autopsy an abscess was found surrounded by a thick dense membrane, and embracing the lower two cervical and upper two dorsal vertebræ. The patient during life had had paralytic symptoms, probably due to the pressure of this collection of pus.

With regard to the hemorrhage which finally caused death, it would appear by no means a very rare event in cases of tracheotomy. In a case published by the late Mr. Royes Bell, death occurred from sudden severe hemorrhage

fifteen days after the operation. No post-mortem was made, but he expresses his opinion that ulceration had taken place into the innominate artery. He also refers to a similar case of Mr. John Wood's, where a silver tube had ulcerated its way through the trachea into the innominate artery. The specimen is in King's College Museum, London. Mr. Parker, in his work on tracheotomy, also mentions a case where the tube had ulcerated through into the innominate vein. Mr. Howse mentions having seen two cases in children at Guy's Hospital where death occurred from a similar cause. Mr. Marsh refers to four fatal cases the result of ulceration.

ACUTE INFECTIOUS OSTEOMYELITIS.

At the Third Congress of Russian Physicians, held at St. Petersburg in January, PROF. BOKROFF, of Moscow, made a report (*Revue de Chirurgie*, April 10, 1889) which contained the following conclusions:

Osteomyelitis most frequently affects the epiphyses of the long bones during their period of growth. Experimental and clinical observations demonstrate that the process is provoked, not by a specific microorganism, but by the same staphylococcus pyogenes that occasions acute suppuration in other tissues. Clinical facts also show a definite relation between osteomyelitis and the furunculosis, lymphangitis, etc., which precedes or follows the disease of the bones. Experiment proves that for the début of the affection in the bones it is necessary: 1st. That a certain number of microbes effect their entrance in a given time; 2d. That they find already certain disturbances of the circulation; 3d. The organism carries on a continual struggle with the microbes which enter the tissues; the same microbe does not always show the same vital force—a culture of staphylococcus of thirty or forty days loses all its pathogenic property; 4th. As a predisposing cause, a preëxisting purulent collection occupies the first place; abscess, furuncles, etc., from which a certain quantity of staphylococcus pyogenes, at the maximum of vitality, may penetrate into the system. By aërial channels infection may occur, but it is not probable that it takes place by the digestive tract. Traumatism and the consecutive vascular disturbances are also frequent predisposing causes.

Bokroff favored early and energetic operative interference, which, in his opinion, did good even when no pus was found.

THE ANTISEPTIC REMOVAL OF SO-CALLED LOOSE BODIES FROM THE JOINTS.

DR. SAMUEL B. WOODWARD (*Boston Medical and Surgical Journal*, April 25, 1889) has been able to collect (principally from English and American sources) 105 cases where claim of direct antiseptic incision of a joint for removal of a foreign body is made. In 104 of them the knee was the joint affected. The list includes, in addition to 92 operations for the simple removal of over 740 loose cartilages (400 in one instance being present), one operation where, besides the removal of a cartilaginous body, a vascular tumor two inches in diameter was cut away with scissors, and another where a bony tumor was removed with a saw. In one case the foreign body proved a sarcoma; in one a fibroma; in one a lipoma; and in another a fibro-fatty tumor.

In two cases loose pieces of bone were removed; in one a thorn, supposed before the operation to be a spicula of bone, and twice bullets were extracted. One of these had been thirteen years in the joint. In two cases "nothing could be found;" but, in one of these, adhesions on the back of the patella were forcibly broken up. There was but one death from the 105 operations, and, as that was due to "phlegmonous erysipelas," the asepsis of the operation is at least doubtful. In two cases suppuration demanded amputation of the thigh, after which the patient recovered.

One of these cases was after removal of a "fibro-fatty body" by Dr. R. F. Neil, where there was "severe manipulation" of the joint; the other was at St. Thomas's Hospital, and no particulars are given.

Stiffness of the affected joint is reported in three cases. In one of these cases 400 loose cartilages were removed, and in the other two, 25 and 4 respectively. In four other cases slight impairment of motion is reported. In one of these there were adhesions and stiffness before operation, but no loose body.

The second was one where a bony tumor was also sawed off. In the third, recovery was complicated by a secondary hemorrhage, rheumatic fever, and pericarditis. Of the fourth, we have no particulars. In all other cases prompt recovery, with good motion of the affected joint, resulted. In place of Larry's death-rate of 21.3 per cent. and Barwell's of 8.3 per cent., we have here a death-rate of less than 1 per cent. (0.9 per cent.), with great doubt whether the single death should be recognized as the result of an antiseptic operation; while in but ten cases (9.5 per cent.) was there failure to produce a perfect joint with good motion. With proper care before, during, and after this operation, there seems to be then but a remote chance of loss of limb, and almost no risk to life, and although in complicated cases there is possibility of more or less resulting stiffness, it is to be remembered that a joint containing loose cartilage is a constant source of annoyance, and that the possessor is always more or less crippled by it.

OTOLOGY.

UNDER THE CHARGE OF

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CYSTS IN THE AURICLE.

HARTMANN, of Berlin, holds that many cases of asserted hematoma auris are not due to an effusion of blood, but to the formation of simple cysts in the auricle (*Archives of Otol.*, 1888; *Annales des Maladies de l'Oreille*, March, 1889). He reports three new cases. The subjects were in good health, of middle age, without any tendency to psychic derangement, excepting in one case. Heretofore the subjects have been men; in this last series one case was that of a woman. There was no traumatic origin in any instance. These tumefactions, which were incised about two weeks after their formation, discharged

a perfectly clear liquid, sometimes yellowish, but never bloody. In all cases the cartilage was denuded. Healing occurred rapidly where a rigorous antiseptic dressing was maintained. Hartmann's method consists in dressing the wound with iodoform gauze. He endeavored to discover microorganisms in the contents of these cysts, but the examinations as well as the cultures on gelatine were negative.

ACUTE MYRINGITIS IN CHILDREN.

EITELBERG has reported a case of acute myringitis in a child four years old (*Archiv für Kinderheilkunde*, Bd. x.; *Annales des Maladies de l'Oreille*, March, 1889). This disease, a rare one in little children, appeared in a little girl, who suddenly became dull, feverish, and lost her appetite. The right membrana tympani was found uniformly, intensely red and swollen, though the malleus could be distinguished. Politzer's inflation giving only temporary relief, the membrana was incised on the supposition that pus was in the drum-cavity. No pus, however, was found; in a few hours the pain in the ear ceased, and in four days the membrana was nearly normal in appearance.

PERSISTENCE OF HEARING AFTER DESTRUCTION OF THE STAPES.

The extirpation of the stirrup in this instance was unintentional (BERTHOLD, of Königsberg, *Arch. of Otol.*, No. 3, 1888; *Annales des Maladies de l'Oreille*, March, 1889). It occurred in a case of otorrhœa followed by a perforation in the membrana and an extensive adhesion of the tympanic membrane. In order to diminish the subjective noises in the head, and the vertigo, the author endeavored to detach the adhesions, and in doing so was surprised to find that the stirrup came out entire on his hook. There was no flow of the labyrinth-fluid, but violent vertigo ensued for two or three days. Berthold concluded that the inflammation had led to dislocation of the stirrup. He insists that some hearing was maintained, because, notwithstanding the perforation in the membrana, loud words were heard near the ear, and when the perforation was closed mechanically the patient heard whispers fifteen feet.

MOBILIZATION OF THE STAPES: OPERATIVE MEANS OF PRODUCING IT.

M. BOUCHERON has given the following outline for the indications and of methods for this operation (*Annales des Maladies de l'Oreille*, January, 1889). The indications are: 1. When the stapes begins to be ankylosed, and ordinary means for its relief impotent. 2. When labyrinthine pressure from without is persistent and compromises the vitality of the acoustic nerve.

Boucheron has performed the operation sixty times without any bad after-results, which he ascribes to strict antisepsis.

The most favorable time for the operation is the beginning of the ankylosis of the stapes, when the hearing for moderately loud speech is yet maintained at the distance of one metre, and when the harmonics of speech (stage whispers) are heard at 20 inches and 30 inches. Then mobilization of the stapes will give an audition for words, at three, four, and even five metres. (Normal hearing for similar sounds is fifteen to twenty metres.) This operation is useless when osseous ankylosis of the stapes has ensued, or when the terminations

of the acoustic nerve are injured or changed by the excessive pressure upon the labyrinth-fluid.

Operative procedure. 1. Antisepsis and cocainization of the external auditory canal. 2. Myringectomy of the posterior half of the tympanic membrane. 3. Dislocation of the incus from the stapes by means of a hook. (In the simpler cases this dislocation is not done.) 4. Mobilization of the stapes in a direction to relieve its inward pressure, either by means of light traction with a small hook, or by drawing it up or down and backward and forward in the direction of the line of action of the stapedius muscle. 5. Then, tenotomy of the tensor tympani. 6. Removal of the malleus from the incus.

Since some of the diseases productive of the retraction of the stapes and the consequent otitis are diseases which relapse, it may happen that the labyrinth compression will return. Therefore, treatment of gout, rheumatism, syphilis, and catarrh, either infectious or from cold, if present, should follow the operation. The operation of mobilization may have to be repeated.

CHANGES IN THE INTERNAL EAR, IN HEREDITARY SYPHILIS.

BARATOUX reports his conclusions based on forty-three autopsies of subjects affected with hereditary syphilis (*Annales des Maladies de l'Oreille*, January, 1889). Nineteen of these cases were stillborn and twenty-four ranged from a few hours to four years old. Among the stillborn eight were affected in the middle ear, three in the labyrinth, eight in the middle and internal ears. In the twenty-four other cases, nineteen were affected in the tympanum, one in the internal ear, and four in both middle and internal ears. This gives twenty-seven cases of tympanic affection, four of labyrinth disease, and twelve of both middle and internal ear disease combined.

Lesions in the tympanic cavity near the labyrinth were attended by injection of the soft parts in the labyrinth. There was thickening of the membranes on a level with the cochlea, and the ampullæ of the semicircular canals, which were reddened. A sero-sanguinolent fluid bathed these parts.

PSYCHICAL DISTURBANCES INDUCED AND MAINTAINED BY AURAL DISEASES.

The attention of alienists is called to the two following considerations by DR. COZZOLINO (*Annales des Maladies de l'Oreille*, February, 1889): 1. Lesions of the ear are frequent among the insane, and very often they sustain an important part in the production of hallucinations or psychic troubles. 2. In a patient affected with auditory hallucinations the ears should always be examined, as an accurate examination will lead to a more rational therapeutics, capable of curing the case if applied in time.

AURAL AFFECTIONS IN "RAILWAY SPINE."

The nervous lesions observed in the so-called "railway spine" should be attributed, according to some observers, to an organic and not to a functional lesion. Aural lesions consequent upon railway injuries have received but little attention. There have been noted uni- or bilateral deafness, and tinnitus aurium as due to these injuries. BAGINSKY reports five cases of aural

injury from railway accidents coming under his notice (*Annales des Maladies de l'Oreille*, March, 1889). He concludes that these auditory disturbances should be referred to a lesion of the auditory nervous system consequent to the railway injury. In many cases the auditory lesions do not appear immediately, which seems due to the progressive nature of the process of degeneration which goes on in the ear.

MÉNIÈRE'S VERTIGO.

BRUNNER, of Zurich, formulates the following conclusions regarding this disease (*Annales des Maladies de l'Oreille*, March, 1889):

1. The name Ménière's disease is no longer applicable to any special and distinct affection, but rather to a complex set of symptoms; hence the name should be changed to Ménière's vertigo.

2. Under this head there should be placed only those cases in which the attacks come on suddenly, without known cause, at distinct and prolonged intervals, without fever, preceded by a more or less intense subjective noise in the ear, and followed by a more or less rapid deafness. This definition excludes vertigo dependent upon mechanical causes in the middle ear, as well as permanent vertigo due to acute labyrinth diseases.

3. Without doubt cerebral lesions, and especially cerebellar lesions, can produce Ménière's vertigo without any positive diagnostic sign. This difficulty does not often occur, because it is rare that such lesions produce deafness, excepting in cases of pressure on the fibres of the acoustic nerve.

4. Ménière's vertigo has generally as a fundamental cause some pathological change, either primary or secondary, in the labyrinth.

5. Nosologically we must distinguish between the grave cases and the light ones, as those consecutive to otorrhœa.

6. Some of the grave ones may be connected with hemorrhages in the labyrinth; some of the light ones with a vaso-motor neurosis.

7. Generally, Brunner thinks, too important a rôle is ascribed to hemorrhage, although many cases are doubtless due to a pathological modification of the blood-pressure in the labyrinth: *an obstacle in the efferent canals of the perilymph and endolymph is an important factor in the pathogeny of this disease.*

8. In favor of the vaso-motor origin of Ménière's vertigo there may be adduced the following reasons: (a) The vertiginous aura preceding the attack. (b) Slight functional troubles show themselves only slowly. (c) A certain regularity in the frequency of the attacks. (d) The effect of quinine or even galvanization of the cervical sympathetic in moderating or arresting the attacks.

9. According to the experience of oculists, large doses of quinine provoke ischemia of the retina, and, as we all know, the labyrinth is also thus congested. We can thus explain the favorable action of this drug in cases of Ménière's vertigo.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

MEMBRANOUS RHINITIS.

DR. F. H. POTTER, of Buffalo (*Journ. of Laryn. and Rhin.*, March, 1889), describes a group of cases of membranous rhinitis, which, according to his observation, occurs in about two per cent. of all cases of acute rhinitis. They were not associated in any instance with any of the infectious diseases. The attack begins as in intensified acute rhinitis with a most disagreeable persistent sensation of tickling, but the systemic disturbances are not severe. By the third day, the discharges form a white, adherent coating over the inflamed turbinated bodies and the septum, which continues for about three weeks despite the most energetic treatment, constitutional and topical.

SARCOMA OF THE NARES.

DR. GEORGE W. MAJOR, of Montreal, has reported (*Journ. of Laryn. and Rhin.*, April, 1889) a case of spindle-celled sarcoma the size of a small pigeon's egg, which had developed very rapidly from the triangular cartilage. It was removed with a cold wire, and its seat of origin was destroyed with the electric cautery. No recurrence had taken place at the end of four months.

SYPHILITIC FIBROID DEGENERATION OF THE NASAL PASSAGES AND PHARYNX.

Under this caption DR. JOHN NOLAND MACKENZIE, of Baltimore, calls attention (*Journ. of Laryn. and Rhin.*, April, 1889) to an interstitial fibroid syphilitic degeneration in the nasal passages and the pharynx, mainly met with in long-neglected cases, chiefly in men and especially in those addicted to the constant use of large quantities of alcoholic beverages. The turbinated bodies are the structures which chiefly suffer. They are much enlarged, and present the appearance of dense, hard, whitish, yellow, or red sessile masses; or they become converted into distinctly pedunculated growths which are true fibroid polypi. Mackenzie believes that a large proportion of the so-called fibroid tumors of the nasal fossa in syphilitic subjects are none other than the prolongations of the degenerate turbinate bodies. They sometimes undergo ulceration and may become partially destroyed, or may become bound, by dense bands of cicatricial tissues, to opposing structures. Under the microscope they present more or less complete conversion of the turbinate bodies into dense fibrous tissue.

The pharynx is less frequently affected. The tonsils and palatine folds are sometimes converted into dense masses with loss of all trace of their original

anatomical appearance. These masses should not be confounded with gummatous infiltration.

The most important points of differentiation are the negative effects of constitutional treatment; the tendency to well-defined outgrowth; the surrounding anæmia; and the hard dense sensation communicated to the finger through the probe.

FIBRONEUROMA OF THE PHARYNX.

DR. G. E. FENWICK (*Journ. of Laryn. and Rhin.*, April, 1889) reports a fibroneuroma removed by external excision from the pharynx of a young girl. It was situated behind the right tonsil and had caused great pain in swallowing. It was one of a number of painful tumors in various parts of the body of the same subject.

TUBERCULOSIS OF THE LARYNX.

DR. J. CHARAZAC, of Toulouse, strongly condemns (*Rev. de Laryn., etc.*, April 1, 15, 1889) the use of the sulphur waters in tuberculosis of the larynx; presenting the notes of a few cases in point, and criticising the accuracy of the claims that have been made for the treatment; contending that his closest research finds but one doubtful case benefited, and that a patient whose improvement is to be attributed to a subsequent sojourn in Egypt.

CYST OF THE LARYNX.

DR. FURUNDARENA-LABAT, of Tolosa, reports and depicts (*Rev. de Laryn., etc.*, April 15, 1889) a rare case of cyst of the right arytenoid cartilage. It was the size of a hazelnut, occupying the posterior half of the vestibule of the larynx and concealing a view of the cartilages of Wrisberg, the arytenoids, and the posterior two-thirds of the vocal bands. Incision with the laryngeal knife and pressure with forceps evacuated a clear fluid mixed with yellowish granulofatty concrete masses; and then the walls were torn off and the parts cauterized with chromic acid. The patient remained well up to date, the operation having been performed February, 1882.

SARCOMA OF THE LARYNX IN A CASE OF MULTIPLE SARCOMA.

HJÖRT reports (*Norsk. Mag. f. Lægevid.*, December, 1838; *Centbl. f. Chir.*, March 16, 1889) an interesting case in a healthy man, sixty-two years of age. Steadily increasing throat trouble had existed for three months. There was difficulty in swallowing solid food, and liquids were sometimes regurgitated through the nose. The voice was somewhat indistinct; the respiration free. Laryngoscopic inspection revealed a grayish-red warty excrescence the size of a pea between the root of the tongue and the epiglottis, somewhat to the right of the middle line. In the interior of the somewhat hyperæmic larynx there was a pedunculated, bluish-red tumor, the size of a chestnut, springing from the inner surface of the left arytenoid cartilage. Its surface was smooth but slightly excoriated. It almost filled the transverse diameter of the larynx. In addition to these growths the patient had a group of bluish tumors from the size of peas to that of beans in the left palm, on the left foot, and on the

right ring finger. These were said to have occasionally undergone spontaneous recession. In one of these growths, after extirpation, densely distributed spindle cells were found with round-celled infiltration along the vessels.

The laryngeal growth was readily removed after splitting the larynx, immediately after a precautionary tracheotomy; both procedures being performed under cocaine anæsthesia exclusively. The two halves of the ossified thyroid cartilage were united with sutures. The voice was completely restored, and the patient was freed from all his annoyances. Microscopically, the tumor was determined to be a spindle-celled sarcoma. Subsequently the tumors in the extremities were extirpated. The abstract makes no mention of extirpation of the tumor in the glosso-epiglottic sinus.

PROLONGED SOJOURN OF LARYNGEAL GROWTHS.

DR. THOMAS HARRIS recently exhibited to the Manchester Medical Society (*Brit. Med. Journ.*, March 2, 1889) a woman, forty-three years of age, who had suffered from almost complete aphonia since she was thirteen years old. Laryngoscopic inspection had been practised for the first time only a few months before, when she first came to Dr. Harris, who found the larynx nearly full of polypi, most of which he had removed with forceps and had found to be simple papillomata. The patient had been repeatedly under treatment for hoarseness and difficulty of breathing. The failure to institute laryngoscopic exploration by her previous attendants seems to the compiler the most remarkable and unfortunate feature in the case, whether the result of ignorance or of neglect.

ENCHONDROMA OF THE CRICOID CARTILAGE.

In a paper on cartilaginous tumors of the larynx (*Med. Jahrb.*, Wien, 1889, Jahrgang 1888, vii. Heft) DR. FERUCCIO PUTELLI, of Venice, describes and illustrates an instance found in the body of a goldsmith, fifty years of age, who died some twenty minutes after admission into the hospital with intense dyspnoea.

The tumor occupied both faces of the plate of the cricoid cartilage, extending so far into the lower portion of the laryngeal cavity as to narrow it to a semilunar slit three millimetres wide. The tumor was spherically ovoid, twenty-two millimetres in thickness, twenty-three millimetres in length; and was composed of cartilage tissue of normal hyaline character peripherally, but centrally of somewhat softer consistence, streaked bluish and white. It was enclosed posteriorly by a thick yellowish lamella, barely a millimetre in thickness. Anteriorly it penetrated into the submucous connective tissue by an irregular surface. The cartilage was retained for a distance of three millimetres from the upper and for four millimetres from the lower extremity.

INTUBATION OF THE LARYNX AND AIR-PASSAGES, WITH A DESCRIPTION OF A NEW INSTRUMENT AS AN AID TO CERTAIN OPERATIONS.

Under the above heading PROF. ANNANDALE, of Edinburgh, reports (*Brit. Med. Journ.*, March 2, 1889) that experience has shown him that intubation of the trachea through the mouth can, in the majority of instances, be sub-

stituted for preliminary tracheotomy or laryngotomy, as a simpler and safer aid to prevent passage of blood into the air tube, in operations involving the mouth or naso-pharynx. The procedure he describes in this connection, however, is catheterism and not intubation. He credits Dr. Macewen, of Glasgow, as the first surgeon to use intubation on the principle he details; that surgeon's first operation having been performed on July 5 and 6, 1878; and he refers to an important and practical paper on the subject by Macewen in the *Brit. Med. Journ.* for July 24 and 31, 1880. He notes a case of his own in point, in which about nine months before his report a man was suffering from great difficulty of respiration, due to pressure from a very large and malignant tumor of the thyroid gland. Annandale decided to cut down upon the displaced thyroid cartilage, penetrate the larynx, and introduce a tube. Before operating he provided himself with an efficient mouth-gag, and with a gum-elastic catheter, No. 10, with an opening at its extremity. During the operation the patient's breathing ceased; and it was only by introducing the catheter through the glottis that his respiration was restored. The anæsthetic was then given through this catheter, and the operation was completed with success. Annandale had since employed a similar plan in operations attended with a risk of a flow of blood into the air-passages. The tube used in these cases was a gum-elastic catheter armed with a stilette of strong wire to render its introduction easier; care being taken that the point of the wire should not project through the terminal opening of the catheter.

While acknowledging that there will always be cases of sudden obstruction in the larynx or trachea most quickly and consequently most successfully restored by rapid laryngotomy or tracheotomy, Annandale believes that many of these sudden emergencies can also be treated rapidly and successfully by the introduction of a tube through the mouth into the trachea, and its retention, when necessary, for some time. He relates an instance of slight displacement of the larynx and trachea by a large and apparently glandular swelling of the neck, in which rapid increase of the swelling ensued, in consequence of an attack of acute inflammation, rendering the breathing most difficult. The house surgeon, Dr. Simpson, introduced a tube into the trachea through the mouth, and this at once relieved the patient. The tube was retained for twenty-four hours, when chloroform was administered through it, and a deep incision into the tumor gave exit to a collection of pus. The pressure being thus taken off from the air-passage the tube was removed, and the case progressed satisfactorily. Dr. Simpson employed the same catheteric procedure successfully in a case of scald from boiling water in a child five years of age.

To overcome the liability of the soft catheter to become compressed by the teeth, or by a twist, Annandale has had a special tube made shaped after Schrötter's, provided with a vulcanite gag to protect it from the teeth. An illustration is given of the appliance. Annandale then discusses the value of intubation in acute inflammatory affections of the larynx, more particularly in croup and diphtheria; and comes practically to conclusions similar to those entertained by conservative surgeons in the United States.

In cases of stenosis of the larynx the result of chronic inflammatory conditions, or of accidental or surgical wounds, Annandale states that the O'Dwyer tubes have been followed by better results than by any other treatment; the

permanent retention of the tube, when it can be borne, being likely to have a beneficial effect in restoring the proper calibre of the canal. With this view the experience of the compiler is in discord; for he has found, in a few such instances in which he has tried intubation and seen its results at the hands of others, that the stricture becomes greater than ever on the permanent withdrawal of the tube after its retention for several weeks or months. He believes, therefore, that section of constricting edges of the stricture, with divulsion, and systematic stretchings afterward, offers better prospects of permanent dilatation, whenever any such prospect is recognizable.

STENOSIS OF THE LARYNX FROM TYPHOID FEVER.

DR. ARTHUR THOST, of Hamburg (*Berliner klin. Woch.*, Jan. 28, Feb. 4 and 11, 1889), in an article on treatment of laryngeal stenosis by dilatation, after the method of Schrötter, states that the prolonged and severe epidemics of typhoid fever in Hamburg have been characterized of late years both by great severity in individual cases and by manifold complications. Among these are various diseases of the mucous membrane of the mouth, parotid, pharynx, rhino-pharyngeal space, middle ear, larynx, and even the œsophagus. Four separate processes may be recognized:

1. Characteristic typhus infiltrations analogous to the process in the intestine (Rokitansky; Eppinger).
2. Mycotic ulcers, small crater-formed ulcers, mostly in the vocal bands, and produced by deeply penetrating microorganisms.
3. Diphtheritic ulcers (typhus, croup) more flattish, spreading over the entire mucous membrane, and leading to superficial necrosis.
4. Decubital ulcers; most frequent on the posterior portion of the larynx.

All the forms of ulceration have great tendency to penetrate in depth, and to produce necrosis of cartilage and consequent stenosis. This is particularly frequent in decubital ulcers, which proceed from the simple catarrh, and which interfere with the taking of nourishment. The careful treatment of this catarrh is, therefore, one of the most important indications. Deep ulcerous processes, whether associated with perichondritis or not, readily excite extensive œdema, which then renders tracheotomy necessary. The deeper portion of the larynx remains free or is implicated in the never-failing tracheo-bronchitis, and the diphtheritic process rarely oversteps the borders of the vocal bands, so that the tracheotomy usually controls the danger of suffocation for good. The upper portions of the larynx do not heal readily.

A number of changes which produce stenosis occur as a result of the perichondritis, necroses, abscesses, cicatricial adhesions, and chronic œdema; all of which render the permanent use of the canula necessary. Its long retention produces granulation-stenosis as a second cause of constriction. Thus, in the majority of cases of stenosis after typhoid fever, there are two forms: one, above, produced by the infectious disease, and one, deeper, produced by granulations and the changes excited by the canula. The granulations of the lower portion of the larynx are found, especially in crico-tracheotomies, at the upper anterior angle of the wound, the very point against which the canula impinges in coughing, and in the various movements of the neck.

A projection forms, too, in the shape of a spur on the posterior tracheal wall at the level of the wound. It cannot be the result of pressure, and is attributed by Stoerk to the remains of an especially intense inflammatory process at this precise place. It is of very firm consistence, and resists the action of thermo-cauterization much longer than the granulations anteriorly.

The treatment of these conditions consists in first burning the granulations and callous projections away with the electric cautery, and then dilating the parts with the solid tin bougies and long tubes used in Schrötter's method and its subsequent details. The bougies may be inserted immediately after the burnings. Several cases are reported in detail which show the successful results of persistence in treatment for a series of months.

PROLAPSE OF THE VENTRICLE OF MORGAGNI.

PRZEDBORSKI (*Gaz. Lek.*, Nos. 51 and 52, 1888; *Journ. of Laryn. and Rhin.*, April, 1889) reports two cases; one in a phthisical lady, cured by cauterization with chromic acid; and the other, a multiple hernia in a man addicted to alcohol, cured by evulsion with forceps.

DERMATOLOGY.

UNDER THE CHARGE OF

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AND

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EXPERIMENTAL RESEARCHES CONCERNING THE RINGWORM FUNGUS.

The experiments made by THIN, and reported in the *British Medical Journal*, February 23, 1889, are both interesting and of practical importance. The experiments were made with affected hairs taken from ringworm patches. The experiments and results are given in tabular form, and have special reference to the influence and destructive effect exerted upon the vitality of the fungus by different substances.

As an incidental experiment it was found that the fungus contained in hairs retained its vitality for at least eleven months after being detached from the scalp. The next table discloses the fact that the trichophyton is sterilized by being placed in water seven days; the practical bearing of this experiment being that simple washing of the affected parts has absolutely no destructive effect upon the fungus. Olive oil, lard, and vaseline, even after the fungus had remained therein for a number of days, had no effect in checking the development of the fungus after it was placed in nutrient gelatine.

Ordinary soapsuds, after a comparatively short period of contact—thirty minutes or more—destroy the vitality of the fungus. This same result was much more certain, and in less time, when soft soap was employed. Contact with one per cent. acetic acid was found to sterilize the fungus, while with a one per cent. solution of sodium carbonate its vitality survived the contact for three days. Sulphur ointment, in quarter strength, was found to sterilize in less than two hours. Ammoniated mercury ointment was likewise destructive, but in a somewhat longer time than with sulphur ointment. Citrine ointment was somewhat more rapid than the ammoniated mercury salve. Soaking in croton oil for variable periods exerted absolutely no effect upon the subsequent development of the fungus.

The conclusions to be drawn from these experiments are manifest. For example, the action of soap and water on the scalp, unless prolonged to a much greater extent than is at all likely, will not destroy the growth of even such spores as may happen to be living amongst the scales on the surface. It is also learned with definite certainty, what was fairly well understood on clinical grounds, that fat is not sufficient to destroy the vitality of the spores. Moreover, it is learned that an ointment which contains a comparatively small proportion of the ordinary antiseptic preparations that are used in the treatment of ringworm, is destructive to all the spores that come in contact with it, if the contact is at all prolonged, excepting, of course, the fungus that is deeper in the follicles than the ointment can penetrate.

MOLLUSCUM CONTAGIOSUM.

In the past thirteen years STELWAGON has met with (*Journal of Cutaneous and Genito-urinary Diseases*, February, 1889) thirty-two cases of this disease. These were observed in groups or series: two groups of thirteen and twelve in a children's home; a group of four cases in a children's hospital; and a group of three cases in a private family. Such experience would, as the writer suggests, point toward a contagious origin; and a study of these cases, and the cases reported by others regarding this point, seems to warrant the following: First, that the disease, while occasionally occurring upon covered regions, is practically seen either upon exposed parts or parts with which the hands must of necessity come more or less in contact, as the genitalia; second, that the disease is observed chiefly in children, and, as a rule, in children of the poorer classes; third, that while it is comparatively rare to meet with single cases, it is exceedingly common for the affection to be seen in groups or series, as in a family or in an institution; fourth, that in admitting its contagious nature, it must at the same time be acknowledged that apparently it possesses this property only in an extremely slight degree.

SUDDEN TURNING GRAY OF THE EYELASHES.

The case reported (*University Medical Magazine*, March 1889) by DE SCHWEINITZ occurred in a well-built, healthy brunette of eighteen years. The middle portion of the cilia of the right upper eyelid, and a number of those of the lower lid, turned white within a week. Both eyes were myopic, but otherwise healthy. No cause could be assigned for the change. The

case, the writer states, is exactly similar to that reported (*Centralblatt für praktische Augenheilk.*, January, 1888) by Hirschberg.

ON THE INCREASING PREVALENCE OF SCABIES, WITH REMARKS UPON TREATMENT.

In a late number (February 14th) of the *Boston Medical and Surgical Journal* appears a paper by WHITE, showing the increasing prevalence of scabies. Since 1881 there has been, as shown by the statistics of the service for skin diseases of the Massachusetts General Hospital, a gradual increase in the number of cases of this disease. This increase has been especially noticeable during the past five years; 68 cases being recorded in 1884, and 165 in 1888. The writer's private practice exhibits the same proportionate increase. As to the plan of treatment advised, the author's method is by an ointment containing the three most active parasitocides—sulphur, balsam of Peru, and naphthol, an application being made nightly for three consecutive nights.

A CLINICAL STUDY OF ALOPECIA AREATA, AND ITS TREATMENT.

In the *Medical Record* of March 2d, BULKLEY gives an analytical study of 119 personal cases of alopecia areata. According to this analysis, the disease is much more common among those of the well-to-do classes, the percentage being 0.45 for dispensary practice, and 1.54 among private patients. The writer thinks, and apparently with good reason, that this discrepancy is against the supposition of a parasitic origin, and favorable to the neurotic theory. Of the 119 cases, 78 were males and 41 females. The youngest patient was four and a half years old and the oldest sixty-nine; in the latter, however, several attacks in earlier life had occurred. The disease, according to the cases here tabulated, is relatively rare in the extremes of life. The largest number were observed between the ages of twenty and thirty, and almost as many between thirty and forty. As to the nature of the disease the author says: "From what has preceded, it is readily seen that I believe in the nervous origin and nature of alopecia areata. I may say that I have examined a large number of hairs taken from patients with this affection, and also scales scraped from the surface, and have always failed to detect parasitic elements; and I may add that in no single instance has the disease been presented to me in a manner to show contagion, as occurs constantly in ringworm and favus, and no two of my cases occurred in the same family."

Treatment, the author believes, should be both constitutional and local, more stress being placed upon the value of the former. The general treatment should be tonic and invigorating, with especial reference to the nervous system. Locally, stimulation of the diseased areas by suitable applications should be advised.

ACCIDENTAL RASHES IN TYPHOID FEVER.

Excluding purpura spots, vibices, taches blenâtres, and sudamina, which are not uncommon, MOORE groups (*Medical Press*, December 5, 1888; *British Journ. Derm.*, January 1889) the accidental rashes met with in typhoid fever

as: (1) Simple hyperæmia; (2) miliary eruptions; (3) erythematous rashes; and (4) urticaria. His conclusions, based upon personal study, are thus stated:

1. Not infrequently, in the course of typhoid fever, an adventitious eruption occurs, either miliary, urticarial, or erythematous. 2. When this happens, a wrong diagnosis of typhus, measles, or scarlatina, respectively, may be made, if account is not taken of the absence of the other objective and subjective symptoms of these diseases. 3. The erythematous rash is the most puzzling of all; but the prodromata of scarlet fever are absent, nor is the typical course of that disease observed. 4. This erythema scarlatiniforme is most likely to show itself at the end of the first or third week of typhoid fever. 5. In the former case, it probably depends upon a reactive inhibition of the vasomotor system of nerves: in the latter on septicæmia or secondary blood-poisoning; or both these may be present together. 6. The cases in which this rash appears are often severe, but its development is important rather from a diagnostic than from a prognostic point of view. 7. Hence no special line of treatment is required beyond that already employed for the safe conduct of the patient through the fever.

[Is it not possible that many of these accidental rashes which have heretofore been considered somewhat confusing and obscure, may, in the light of our present knowledge, be looked upon as medicinal?—EDS.]

PHTHIRIASIS PALPEBRARUM.

DE SCHWEINITZ adds another case (*University Magazine*, March, 1889) to the comparatively small number of cases of this condition on record. It was observed at Dr. Norris' eye service of the University Hospital, being the second case in an aggregate of ten thousand. The patient, a boy of three and a half years, was brought for relief of the local irritation and itching. "On superficial examination, the borders of the lids appeared covered with many small, dark scabs, which upon closer inspection resolved themselves into lice, clinging closely to the margins of the lids. The eggs, darker in color, were fastened with great regularity along the roots of the cilia, and in many instances the parasites themselves were partially buried head-foremost in the hair follicles."

OBSTETRICS.

UNDER THE CHARGE OF

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THE AGENTS MOST EFFECTIVE IN LESSENING THE MORTALITY-RATE OF PARTURITION.

GALABIN (*British Medical Journal*, March 16, 1889) calls attention to a period in English obstetric science when sanitary improvements in space,

ventilation, and cleanliness, reduced the death-rate of the British Lying-in Hospital to 3.2 per 1000 (1789 to 1800). This improvement was before the days of antiseptis, and equals the best results obtained to-day. It was of short duration, and was followed by a return to the high mortality-rate. It is a striking proof of the value of hygienic science, but Galabin finds in it no reason to decry antiseptis: both combined are indicated.

He adds a practical point in the use of bichloride of mercury. Owing to the tendency which this salt possesses to combine with various impurities in water, he prefers a concentrated solution with glycerine and dilute hydrochloric acid, which may be easily diluted for douches, and can be readily carried. His personal preference is for routine douches of carbolic solution after labor.

THE INDUCTION OF LABOR BY CERVICAL TAMPONS OF IODOFORM GAUZE.

DÖLGER (*Münchener medicinische Wochenschrift*, No. 13, 1889) reports two cases of contracted pelvis in which labor was induced by repeatedly tamponing the cervix with iodoform gauze (ten per cent.). Comparison with other methods shows this to be more speedy, very efficient, and thoroughly antiseptic.

BREECH PRESENTATION, WITH DELAYED LABOR, THE CORD ENCIRCLING THE FŒTAL TRUNK.

BUDIN (*Archives de Tocologie*, No. 1, 1889) reports a case of breech presentation in which efforts to perform cephalic version failed. Labor being delayed, although labor pains were strong, the hand was introduced to bring down the breech. The cord was found encircling the trunk and passing beneath the axillæ. It was cautiously dislodged, and labor proceeded spontaneously. The insertion of the cord was velamentous.

Lefour has recently reported two cases in which cephalic version was prevented by the cord coiled about the neck. When the conditions for version are apparently favorable and judicious efforts fail, this complication may be suspected; the obstetrician should proceed cautiously, as rupture of the cord or detachment of the placenta and death of the fœtus may result.

TWO CASES OF TRIPLETS.

EISENHART (*Centralblatt für Gynäkologie*, No. 10, 1889) reports two cases of triplets at Munich. The first was a multipara, in whose family twin pregnancy had occurred. The liquor amnii was abundant; nephritis was also present. Labor lasted twenty-six and one-half hours; the children were girls, two born in vertex presentation, one in breech. There were two placentæ, connected only by the membranes, double amnion, one chorion; the pregnancy was twin, with the addition of a single conception. The mother recovered without complication; one child survived.

The second case was triple abortion at five months. The presentations were the same as in the first case; two children were girls, the third, a boy. There were one chorion and two amnions. Single pregnancy had existed,

complicated by twin pregnancy. In Munich, 1 triple birth in 5218 has been observed.

A SÄNGER-CÆSAREAN SECTION FOR SYMMETRICALLY CONTRACTED PELVIS.

CHAMPNEYS (*British Medical Journal*, April 13, 1889) reports a Säger operation for symmetrically contracted pelvis (antero-posterior diameter of pelvic inlet one and three-fourths inches) at seven months. The patient had induced labor and craniotomy at seven months in a previous pregnancy. The operation was performed when the os dilated. The deep sutures were silver, the superficial silk; the patient was sterilized by ligating the tubes (before they expand to the ampullæ) with kangaroo tendon, the ligature cutting through the tube. Uninterrupted recovery ensued.

In discussing the case (London Obstetrical Society, April 3d), PLAYFAIR preferred chromic acid catgut for deep sutures; he would have removed the ovaries. CULLINGWORTH and PHILLIPS used heavy and light silk for sutures. HEYWOOD SMITH would have allowed the patient to go to term and amputated the uterus. In closing, CHAMPNEYS defended sterilization by ligation of the tubes, because bad results, especially nervous derangements, followed oophorectomy in some cases. He preferred to turn out the uterus in operating, as hemorrhage was better controlled and stitches more rapidly taken.

PREGNANCY IN THE RIGHT UTERINE CORNU; LAPAROTOMY; RECOVERY.

SCLIFASSOWSKI (*Revue Générale de Clinique*, No. 13, 1889) reports the case of a patient pregnant the second time, in whom the signs of normal pregnancy were partly wanting; an abdominal tumor freely movable, and persistent flooding were present.

Laparotomy disclosed an ovoid tumor connected by a narrow pedicle with the right cornu of the uterus. The pedicle was ligated, and the tumor removed; it contained a partly decomposed fœtus at seven months; recovery followed without complications. The normal pregnancy had occurred in the left cornu of the uterus; in the abnormal pregnancy insemination was effected by the extra-uterine transmigration of the spermatozoa, as illustrated in animals.

A SUCCESSFUL CASE OF REPEATED CÆSAREAN SECTION.

SKUTSCH (*Archiv für Gynäkologie*, Band 34, Heft 1) reports a case of Cæsaean section, performed a second time in the clinic at Jena, for contracted rhachitic pelvis. On opening the abdomen the uterine and abdominal wall were found adherent; they were separated, and adhesions ligated. The mesentery was adherent to the uterine wall, and ligated in seven portions on the left side; in six on the right. Adhesions between the uterus and bladder were also separated. In the thickened peritoneal covering of the uterus were found three sutures of silver wire; in the subjacent uterine muscle two more; they were easily removed. An adhesion between the transverse colon, mesentery, and abdominal wall existed. The uterus was opened *in situ*, and the children (twins) extracted. An examination of the uterine wall showed that excision of the scar of the former operation was unnecessary, as the uterine

tissue was of normal thickness and consistence. Silk was used for all sutures, and hemorrhage was controlled by the elastic ligature about the cervix. The operation consumed seventy-eight minutes. Although the patient had marked albuminuria, she recovered; mild bronchitis and meteorismus, relieved by piercing the intestines with a trocar, complicated her recovery for a few days. Both children survived in good condition. This is the third recorded case of repeated modern Cæsarean section.

Skutsch also reports a case of Cæsarean section for contracted pelvis, with success. The case was without complications, and was performed by Sängers method.

EXTRA-UTERINE PREGNANCY, WITH RUPTURE OF THE FŒTAL SAC INTO THE BLADDER.

EHRENDORFER (*Wiener klinische Wochenschrift*, No. 13, 1889) reports the case of a multipara who first came to his clinic with a history of the suppression of menstruation, intermittent hemorrhages, the discharge of fœtal fragments, and incontinence of urine. The urethra was dilated; eleven fœtal bones were removed from the bladder, and the patient's symptoms were relieved. A large piece of bone lay in the posterior wall of the bladder which it was not deemed expedient to remove.

Nearly two years afterward the patient returned for the relief of vesical irritability. The urethra was dilated, and a piece of cranial bone one and a quarter inches in diameter was removed from a pocket in the posterior wall of the bladder; seven large bones and five fragments were then removed, the bladder douched with thymol solution and an iodoform bougie placed in the urethra. The patient recovered without incident, three years after the occurrence of the extra-uterine pregnancy.

Hecker has collected one hundred and thirty-two cases of extra-uterine pregnancy, seventy-six of which recovered: of these twenty-eight resulted in the discharge of the fœtus through the bowel, seventeen formed lithopædia, in fifteen the fœtus was discharged through the abdominal wall, in eleven by laparotomy, in three by incision into the vulva, and two are not accurately reported.

PLACENTAL INFARCTS AND NEPHRITIS.

ROSSIER (*Archiv für Gynäkologie*, Band 33, Heft 3) found infarcts of the placenta in 66.6 per cent. of cases of nephritis in the Stuttgart Maternity; in 104 cases 13.8 per cent. had white placental infarcts without albuminuria, 44 of these births were premature. In Basel he found placental infarcts in 55.5 per cent. of cases of nephritis, and in 18.6 per cent. of cases when albuminuria was absent.

Many of the cases were primiparæ; if nephritis occurs during subsequent pregnancies abortion or habitual fœtal death may follow, caused by placental disease. His clinical investigations were completed by microscopic examinations.

AN EXAMINATION OF THE UMBILICAL CORD FOR MICROÖRGANISMS.

CHOLMOGOROFF (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 16, Heft 1) has examined the fœtal portion of the umbilical cord for micrococci.

At birth none were found: afterward pathogenic and non-pathogenic bacteria developed. The cord necroses after ligation by mummification or mortification; if mortification occurs, bacteria of all kinds develop in abundance. In mummification pathogenic bacteria develop about the abdominal extremity of the cord only; non-pathogenic bacteria are present in the remainder of the cord.

To dress the cord absorbent cotton, lanolin, and plaster of Paris were used. The plaster-of-Paris dressing favored mummification best of all, and hindered the development of pathogenic bacteria. The pathogenic bacteria found in the cord are identical with those of puerperal septicæmia; their development may occur independently of septicæmia in the mother or ophthalmia in the child.

THE RELATIVE WEIGHT OF THE FŒTAL ORGANS.

LOMER (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 16, Heft 1) has made extensive studies on the relative weight of fœtal organs; among his conclusions the following have practical interest. The kidneys do not hypertrophy immediately after birth; it is, therefore, probable that they were fully developed and functionally active during intra-uterine life. The liver and spleen vary so greatly in size in different individuals that caution must be exercised in diagnosing syphilis because of enlargement of these organs.

FŒTAL LEAD-POISONING.

LEGRAND and WINTER (*Wiener medicinische Presse*, No. 9, 1889) report the case of a fœtus born of parents who worked in a bookbindery, and who suffered from lead-poisoning. The mother had aborted repeatedly. Her sixth pregnancy resulted in the premature birth of an ill-developed fœtus, which survived two weeks. Post-mortem examination of its viscera showed renal cirrhosis; the liver was markedly cirrhotic, and lead in appreciable quantity was found in the liver.

A CLINICAL STUDY OF THE NORMAL AND DISEASED STOMACH IN INFANTS.

LEO (*Berliner klinische Wochenschrift*, No. 49, 1888) has examined the contents of the stomach in one hundred and thirty-four infants, by the sound and lavage. In healthy infants the reaction of the empty stomach was acid, neutral when water was introduced. The stomach contained saliva, mucus, hæmatine, and blood-corpuscles, the white especially abundant.

In nurslings the stomach is empty an hour after feeding; milk is found in the stomachs of bottle-fed infants two hours after a meal in a concentrated fluid which contains no pro-peptone.

Mother's milk is neutral in reaction in the stomach; cow's milk acid, the acidity being established fifteen minutes after a meal, the acid being HCl. The lab-ferment is present soon after birth; pro-peptone is present in thirty minutes after digestion begins; HCl is constantly formed. Pepsin was not found. Zymogen was recognized in three cases.

In pathological cases the stomach was strongly acid; Koch having shown that acids do not destroy microbes. The stomach was thoroughly douched

with sterilized water, to which an alcoholic solution of thymol was added. Milk and barley water or breast milk was then given. The best results were obtained in acute dyspepsia; the treatment stimulated the motor function of the stomach.

A NEW METHOD OF ARTIFICIAL FEEDING FOR INFANTS.

ESCHERICH (*Münchener medicinische Wochenschrift*, Nos. 13 and 14, 1889) finds the usual methods of artificial feeding for infants defective, because too great stress is laid upon the percentage of nourishment contained in a given mixture, to the neglect of the actual amount of nourishment obtained by the child.

As a basis of computation he takes an estimate of the average weight at birth at between seven and eight pounds; he tabulates the normal gain during the first year and calculates the amount of nourishment appropriate for each increment. Beginning with eight meals in twenty-four hours of one and a half ounces each, the child receives six meals at nine months, each six ounces; at ten months a mixed diet, embracing solids, is allowed. The mixture which Escherich prefers is sterilized cow's milk; to each four ounces a large teaspoonful of malt extract is added, because malt is less liable to fermentation than milk or cane sugar. This is diluted with sterilized water in progressively diminished quantities; he supplies fat by adding to the water a preparation of almond meal, one teaspoonful to four ounces of water. He believes that the usual methods of feeding result in the ingestion of much more food than is assimilated.

A NEW APPARATUS FOR STERILIZING MILK.

EISENBERG (*Wiener klinische Wochenschrift*, No. 12, 1889) has devised an apparatus for sterilizing milk consisting of a tin box containing a wire rack for twelve graduated nursing bottles. These are filled with milk in proper dilution and stoppered with cotton, as rubber corks do not bear heat well. The box is half filled with water and placed upon a stove or range. Milk is sterilized in thirty or forty minutes after the water boils. This apparatus costs one-half the price of Soxhlet's.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

VAGINAL HYSTERECTOMY.

At a recent meeting of the Hamburg Obstetrical Society KÜMMELL reported eight cases of vaginal extirpation of the uterus, only three patients surviving twelve months after the operation. His experience had led him to believe that the induration so often felt at the sides of the diseased uterus was due to malignant infiltration, rather than to simple para- or perimetritis.

In the discussion following FRAENKEL stated his belief that it was impossible to make any positive statement regarding the curability of uterine cancer. In many cases that appeared to be favorable clinically the disease was really advanced. From a microscopical examination of five cancerous uteri he had been led to differ radically from Landau, who claimed that in cases of carcinoma of the portio vaginalis the corporal endometrium underwent sarcomatous degeneration.

SCHÜTZ, referring to Hofmeier's statistics, called attention to the fact that no patients survived the radical operation more than four years, whereas many lived longer after high amputation of the cervix.

STATISTICS OF VAGINAL HYSTERECTOMY.

TERRIER (*Revue de Chirurgie*, 1888, No. 5) reports eighteen cases, with four deaths due immediately to the operation. In three cases it was impossible to remove all the disease, and the patients soon died in consequence. Of the eleven patients who made a good recovery, only four were free from recurrence at the end of two years.

His deductions are as follows :

1. The operation is a serious one, and the mortality high.
2. Recurrence is the rule, and occurs soon after the operation.
3. Nevertheless, total extirpation is preferable to amputation of the cervix.
4. The compression-forceps (which are removed at the end of twenty-four hours) are safer than the ligature for controlling hemorrhage.

[In view of the writer's statistics, his recommendation of the radical operation seems somewhat contradictory.—ED.]

SUCCESSFUL EXTIRPATION OF A CANCEROUS UTERUS AT THE SIXTH MONTH OF PREGNANCY.

ZWEIFEL prefaces his account of this interesting case (*Centralblatt für Gynäkologie*, March 23, 1889) with a general review of the subject. According to Cohnstein, only twenty-nine per cent. of the pregnant women with this complication abort; even when the cervix and the lower uterine segment are extensively diseased, the pregnancy generally goes to full term. It is usually stated that cancer grows more rapidly under the influence of pregnancy, but the latter condition alone must not be considered; the effect of parturition and the puerperium should also be taken into account. The three factors together undoubtedly promote the increase of the growth.

It should be remembered that as long as the disease is limited to one lip of the cervix, and the latter is still dilatable, spontaneous delivery is possible. When, on the contrary, there is extensive infiltration labor is retarded, and either rupture of the uterus occurs, the woman dies undelivered, or the pains cease, and the retained foetus becomes decomposed.

With regard to the treatment during parturition different plans have been recommended. Bischoff has incised the indurated cervix or scraped away the cancerous tissue with success. GÖNNER recommended this as the routine practice to be pursued. The forceps have been used successfully. Version is generally regarded as objectionable on account of the danger of lacerating

the uterus. Craniotomy is equally dangerous. Cæsarean section has given good results when the child was living and viable.

ZWEIFEL thinks that if the patient is seen before labor sets in, it is better to scrape away the diseased tissue, an operation that does not injure the fœtus and does not necessarily cause abortion. Whenever the case is in the inoperable stage, and the life of the mother can be prolonged by curetting, we should operate without regard to the fate of the child. If the disease is limited to the cervix, and the patient is seen before the third month of pregnancy, the uterus should be extirpated per vaginam. After that period the organ is too large to remove in that way, and must be extirpated by laparotomy (Freund's operation). In either case a radical operation is indicated at once; to temporize until the child becomes viable is to wait until the disease has spread so that the mother will have no chance of recovery.

The following successful case is reported: The patient, æt. thirty-two, began to have severe pains in the lower part of the abdomen soon after entering upon her seventh pregnancy. Later profuse hemorrhages occurred, so that she entered the hospital supposing that abortion was imminent. On examination the fundus uteri was found to be at the umbilicus, and the fœtal heart could be heard. The portio vaginalis was much hypertrophied, and was the seat of an indurated growth which bled easily on being touched. Chloride of zinc was applied to the diseased surface, creolin injections being used after the formation of a slough.

Since the disease was limited to the cervix, the writer determined to extirpate the uterus. The patient was first placed in the lithotomy posture; the portio vaginalis was exposed, and was separated on all sides by the thermocautery. Douglas's pouch was then opened with the same instrument, and the vagina was packed with iodoform gauze. The patient was next put in the ordinary position for laparotomy, and a long incision was made in the abdominal wall, through which the uterus was rolled out, opened, and the child extracted, the cervix having been encircled with a temporary rubber cord in the usual manner. The broad ligaments were then ligated in sections, the cervix was transfixed and tied with silk, and the cord was removed. The body of the uterus (containing the placenta) was excised, after which the bladder was dissected off from the stump, the operation being facilitated by counter-pressure made per vaginam by an assistant. The ligatures were brought down into the vagina. The lithotomy posture was again assumed, the abdominal wound having been closed in the usual manner, and the stump was removed from below as in an ordinary vaginal hysterectomy. The wound in the fornix was partially closed with catgut sutures; a T-shaped drain was introduced, and the vagina was packed with iodoform gauze. The patient lost but little blood, and made a good recovery. The child, of course, lived but a few minutes.

The advantages claimed for this method are the fact that the abdomen is open only a short time, the slight hemorrhage, and the possibility of saving not only the mother but the child (when viable), since the life of the latter is not imperilled by the preliminary operation on the vagina. Previous Freund's operations, undertaken under the same conditions, resulted as follows: Schröder lost two patients, Bischoff one, and Spencer Wells saved the mother.

DISINFECTION OF THE GENITAL CANAL.

STEFFECK (*Centralblatt für Gynäkologie*, April 6, 1889) differs from Döderlein, who prefers creolin to corrosive sublimate as a vaginal injection. Creolin is undoubtedly a good deodorizer, especially in cases of cancer of the uterus, but the writer has not found a two-per-cent. solution to be sufficiently strong as a germicide. Even after following Günther's directions—*i. e.*, scrubbing the vagina and external genitals thoroughly and then using a three-per-cent. solution of creolin, he found that the vagina speedily became infected with germs which were probably contained within the cervical canal. His deductions are based on careful bacteriological experiments. A three-per-cent. solution of carbolic acid, as well as sublimate, is a more active germicide.

 ILEUS AFTER LAPAROTOMY.

KÜMMELL introduced this subject for discussion before the Hamburg Obstetrical Society (*Centralblatt für Gynäkologie*, April 13, 1889). Jaffé enumerated the causes of obstruction, *viz.*, a simple bend in the gut, adhesion of the same resulting from injury to the peritoneum, and defective antisepsis. The human peritoneum was so much more sensitive to irritants than that of animals, that experiments in the latter did not, he thought, give a correct idea of the causes of peritonitis. It was safer not to use chemical antiseptics at all, but only materials sterilized by heat. Kümmell thought that the ordinary antiseptic solutions were non-irritant, although he had obtained just as good results without them. In his opinion, the use of the cautery was the principal cause of adhesions and ileus. In a case of obstruction, before resorting to laparotomy, he would administer opium, with the view of quieting the peristaltic movements of the gut above the point of occlusion. Clysmata were useless unless the obstruction was low down.

 INDICATIONS FOR LAPAROTOMY ON ACCOUNT OF ACUTE PROCESSES.

GERSONY (*Wiener med. Presse*, 1888, No. 46) includes under this head all cases in which life is suddenly endangered, and the physician must decide promptly whether to employ palliative treatment or to perform laparotomy. The principal indications are three, *viz.*: 1. Hemorrhage, due to the rupture of abdominal viscera, or the sac of an ectopic gestation, or to wounds of large vessels; 2. Localized peritonitis, especially that due to torsion of the pedicle of a tumor; 3. Sepsis, resulting from the escape of pus into the cavity (from rupture of an abscess), intestinal obstruction, or the presence of foreign bodies.

 PELVIC ABSCESS AFTER LAPAROTOMY, COMMUNICATING WITH THE INTESTINE.

MURATOW (*Med. Rundschau*, 1888, No. 7) reports a case of salpingotomy, in the course of which a pyosalpinx was ruptured, the contents escaping into the cavity. The abdominal wound healed by first intention, but six months later an abscess developed at its lower angle, which opened and discharged with the pus several tapeworms. Per vaginam a tumor as large as an apple was felt at the site of the stump. This was opened through the fornix and a quantity

of pus was evacuated containing living proglottides. The entero-abdominal fistula closed in the course of four months; the tumor remained, but was much smaller. The writer thinks that the abscess developed within the folds of the broad ligament and communicated with both the external wound and the intestine.

GUTTURAL REFLEX AFTER OPERATIONS ON THE UTERUS AND OVARIES.

CHAMPIONNIÈRE (*Journ. de Méd. et de Chir.*, tome lx., May, 1888) calls attention to a peculiar phenomenon only noted after laparotomy for intra-pelvic troubles. Two or three days after the operation the patient is observed to be restless and sleepless. There is no elevation of temperature, but the pulse is accelerated, the respiration rapid and irregular, and there is a spasmodic cough, which in severe cases may lead to uncontrollable, and even fatal, vomiting. The disturbance may continue for a few or several weeks. The same reflex phenomena are observed early in pregnancy.

INVESTIGATIONS ON THE ROUND LIGAMENTS.

BEURNIER (*Gaz. des Hôpitaux*, 1889, Nos. 2 and 4) thinks that the reason why Alexander's operation is not popular in Germany is because the round ligaments are so difficult to identify, as they often split up after emerging from the inguinal canal. He estimates the average length of the ligament at from five to six inches, about an inch being allowed to the terminal portion. The average diameter of the cord near the uterus is one-twelfth of an inch, but that of the extra-inguinal portion is only one-twenty-fifth of an inch. The ligament will sustain an average weight of one pound four ounces without rupturing. At least one and one-half inches should be drawn out during the operation. Out of a hundred and thirteen cases which the writer collected there was a permanent cure in seventy-nine. [These measurements are certainly below those of other observers.—Ed.]

THE ACTION OF GLYCERIN ON THE SECRETION OF THE VAGINA.

HERMANN, in a recent paper read before the London Obstetrical Society, reports the results of a series of experiments, conducted with the view of determining if the local application of glycerin to the vaginal mucous membrane caused an increased flow of mucus. The glycerin was introduced on pledgets of cotton-wool and in suppositories, the weight of the drug being carefully noted, as well as the weight of the subsequent vaginal discharge. The observer came to the conclusion that when the vaginal secretions were scanty glycerin tended to increase them, but if they were copious it caused no perceptible increase in the amount.

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CLINICAL REPORTS.

CHRONIC GASTRIC CATARRH AND URIC ACID CALCULI.

A Case stated by Dr. JOHN C. COLEMAN, of Scottsburg, Va., a retired Surgeon of the United States Navy.

"Mr. C. was for a number of years a sufferer from CHRONIC GASTRIC CATARRH. While his diet was exclusively TEA and CRACKERS, BREAD and MILK, and other similar articles, it was frequently thrown off in an undigested state soon after taking it, and at times he discharged from an empty stomach a strongly acid glairy mucus. A marked URIC ACID DIATHESIS supervened, consequent upon which he suffered for a period of some two years great VESICAL IRRITATION and possible CYSTITIS, attended by pain so intense and constantly present as to require that he should be kept for the most part under the influence of opiates. After a persistent but ineffectual exhibition of all remedies supposed to be indicated in the case, he was put for the latter affection upon the Buffalo Lithia Water, Spring No. 2, with the happiest possible effect.

"In a few weeks, after commencing the use of it, the irritable condition of the *Bladder* was so far relieved that he was enabled to dispense entirely with the use of opiates. At the expiration of some eight weeks he had an attack of unusual severity, from which he was relieved by the discharge of a CALCULUS, followed at short intervals by the discharge of three others, which proved to be the termination of this trouble, as from that time there was entire subsidence of the painful symptoms described, and the *Bladder* resumed its natural state.

"While prescribed with special reference to the relief of the *Irritable Bladder*, the action of the Water was not less surprisingly happy in the GASTRIC AFFECTION, with remarkable promptness correcting the highly acid condition of the *Stomach*, restoring a healthy digestion and assimilation and tone and vigor to the depressed NERVOUS SYSTEM.

"In a few months he was able to eat, with perfect impunity, the coarsest articles of diet. He is now, after a lapse of several years, in robust health, having had no return of these painful maladies."

CHRONIC GASTRIC CATARRH.

Case of JOHN P. KEELING, Esq., stated by Dr. S. S. KEELING, Norfolk, Va., Member Medical Society of Virginia.

"Mr. John P. Keeling labored under CHRONIC DYSPEPSIA, and was always subject to attacks of *Spasmodic Gastralgia* immediately upon taking food into the stomach, which attacks were not at all amenable to treatment. Not unfrequently the stomach rejected everything in the way of food or drink, and he was of necessity confined to the lightest possible articles of diet, meat and vegetables being entirely excluded. He became so prostrated that it was with difficulty he could walk across his chamber floor, and had often to be lifted about. Such was the state of his NERVOUS SYSTEM that great solicitude was felt as to his mental condition.

"He visited Baltimore for medical aid, and was for many months under the treatment of some of the most eminent men of the profession in that city, but without beneficial result, and was finally advised that he had nothing to hope from remedies.

"Returning in an extremely critical condition to his home in the county of Princess Anne, he came under my professional care. Satisfied that medicine was unavailing in the case, I advised the Buffalo Lithia Water, Spring No. 2. His stomach, however, was in a highly irritable condition, and I found it necessary to administer it in very small quantities; and it was at first given not exceeding an ounce at a dose, repeated at stated intervals. At the expiration of the third day the irritability of the stomach was decidedly less, and the quantity was then increased from day to day until the thirteenth day, when I found that the patient could take twelve ounces, which I regard as a maximum dose at any time. Persisting in its use, on the twenty-eighth day he was free from pain, the stomach in a normal condition readily receiving both solids and liquids in moderate quantities, strength greatly increased, and nervous symptoms entirely relieved. At the expiration of the seventh week he was able to attend actively and regularly to his business upon the farm. His recovery, which I regard as one of the most remarkable I ever knew of, I attribute entirely to the Buffalo Lithia Water."

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